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**GENERAL VIEW
OF THE
AGRICULTURE
OF THE COUNTY OF
MID-LOTHIAN:**

WITH OBSERVATIONS ON THE MEANS OF ITS IMPROVEMENT.

Drawn up for the Consideration of the
BOARD OF AGRICULTURE AND INTERNAL IMPROVEMENT,

*K. Academies -
London.*

**From the Communications of
GEORGE ROBERTSON FARMER, AT GRANTON,
NEAR EDINBURGH,**

**With the additional Remarks of several respectable GENTLEMEN and
FARMERS in the County.**

A simple scene! yet hence Britannia sees
Her solid grandeur rise: hence she commands
Th' exalted stores of every brighter clime;
The treasures of the Sun without his rage;
Hence fervent all with culture, toil, and arts,
Wide glows her land: her dreadful thunder hence
Rides o'er the waves sublime, and now, even now
Impending hangs o'er Gallia's humbled coast;
Hence rules the circling deep, and awes the world.

THOMSON,

EDINBURGH:

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W. CREECH, Edinburgh; and J. ARCHER, Dublin.

1795.

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GENERAL VIEW

OF THE

AGRICULTURE

Jos. Banks



ADVERTISEMENT.

THE great desire that has been very generally expressed, for having the AGRICULTURAL SURVEYS of the KINGDOM re-printed, with the additional Communications which have been received since the ORIGINAL REPORTS were circulated, has induced the BOARD OF AGRICULTURE, to come to a resolution, of re-printing such as may appear on the whole fit for Publication. It is proper, at the same Time, to add, that the Board does not consider itself responsible, for any Fact or Observation contained in the Reports thus re-printed, as it is impossible to consider them yet in a perfect State; and that it will thankfully acknowledge any additional Information which may still be communicated: an Invitation of which, it is hoped, many will avail themselves, as there is no Circumstance from which any one can derive more real Satisfaction, than that of contributing, by every possible means, to promote the Improvement of his Country.

N. B.—*Letters to the Board may be addressed to Sir JOHN SINCLAIR, Bart. the President, M. P. London.*

PLAN

FOR RE-PRINTING THE

Agricultural Surveys.

By the PRESIDENT of the BOARD of AGRICULTURE.

A BOARD established for the purpose of making every essential inquiry into the Agricultural State, and the means of promoting the internal improvement of a powerful Empire, will necessarily have it in view, to examine the sources of public prosperity, in regard to various important particulars. Perhaps the following is the most natural order for carrying on such important investigations ; namely, to ascertain,

1. The riches to be obtained from the surface of the national territory.
2. The mineral or subterraneous treasures of which the country is possessed.
3. The wealth to be derived from its streams, rivers, canals, inland navigations, coasts, and fisheries: And,
4. The means of promoting the improvement of the people, in regard to their health, their industry, and morals, founded on a *statistical* survey, or a minute and careful inquiry, into the actual state of every parochial district in the kingdom, and the circumstances of its inhabitants.

Under

Under one or other of these heads, every point of real importance, that can tend to promote the general happiness of a great nation, seems to be included.

Investigations of so extensive, and so complicated a nature, must require, it is evident, a considerable space of time before they can be completed. Differing indeed in many respects from each other, it is better perhaps that they should be undertaken at different periods, and separately considered. Under that impression, the Board of Agriculture has hitherto directed its attention to the first point only, namely the cultivation of the surface, and the resources to be derived from it.

That the facts essential for such an investigation might be collected with more celerity and advantage, a number of intelligent and respectable individuals were appointed, to furnish the Board with accounts of the state of husbandry, and the means of improving the different districts of the kingdom. The returns they sent were printed, and circulated by every means the Board of Agriculture could devise, in the districts to which they respectively related; and in consequence of that circulation, a great mass of additional valuable information has been obtained. For the purpose of communicating that information to the Public in general, but more especially to those counties the most interested therein, the Board has resolved to re-print the Survey of each County, as soon as it seemed to be fit for publication; and among several equally advanced, the counties of Norfolk, Lancaster, and Mid-Lothian, were pitched upon, for the commencement of the proposed publication. When all these Surveys shall have been thus re-printed, it will be attended with little difficulty, to draw up an abstract of the whole, (which will not probably exceed two or three volumes quarto) to be laid before His Majesty, and both Houses of Parliament; and afterwards, a general Report, on the present state of the country,

country, and the means of its improvement, may be systematically arranged, according to the various subjects connected with agriculture. Thus every individual in the kingdom may have,

1. An account of the husbandry of his own particular county; or,
2. A general view of the agricultural state of the kingdom at large, according to the counties, or districts, into which it is divided; or,
3. An arranged system of information on agricultural subjects, whether accumulated by the Board since its establishment, or previously known;

And thus information respecting the state of the kingdom, and Agricultural knowledge in general, will be attainable with every possible advantage.

In re-printing these Reports, it was judged necessary, that they should be drawn up according to one uniform model; and after fully considering the subject, the following form was pitched upon, as one that would include in it all the particulars which it was necessary to notice in an Agricultural Survey. As the other Reports will be re-printed in the same manner, the reader will thus be enabled to find out, at once, where any point is treated of, to which he may wish to direct his attention.

PLAN OF THE RE-PRINTED REPORTS.**Preliminary Observations.****CHAP.****I. Geographical State and Circumstances,****SECT. 1.—Situation and Extent.****2.—Divisions.****3.—Climate.****4.—Soil and Surface.****5.—Minerals.****6.—Water.****II. State of Property.****SECT. 1.—Estates, and their Management.****2.—Tenures.****III. Buildings.****SECT. 1.—Houses of Proprietors.****2.—Farm Houses and Offices; and Repairs.****3.—Cottages.****IV. Mode of Occupation.****SECT. 1.—Size of Farms.—Character of the****Farmers.****2.—Rent—in Money—in Kind—in Person-****al Services.****3.—Tythes.****4.—Poor Rates.****5.—Leases.****6.—Expence and Profit.****V. Implements.****VI. Inclosing—Fences—Gates.****VII. Arable Land.****SECT. 1.—Tillage.****2.—Fallowing.****3.—Rotation of Crops.**

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5.—Crops not commonly cultivated.

CHAP.

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2.—Artificial Grasses.

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IX. Gardens and Orchards.

X. Woods and Plantations.

XI. Wastes.

XII. Improvements

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2.—Paring and Burning.

3.—Manuring.

4.—Weeding.

5.—Watering.

† Where the quantity is considerable, the information respecting the crops commonly cultivated, may be arranged under the following heads: (for instance of wheat.)

1. Preparation, { tillage,
manure.

2. Sort.

3. Steeping.

4. Seed (quantity sown.)

5. Time of sowing.

6. Culture whilst growing { hoe,
weeding
feeding.

7. Harvest.

8. Threshing.

9. Produce.

10. Manufacture of bread.

In general the same heads will also suit the following grains:

Barley. Oats. Beans. Rye. Pease. Buck-wheat.

Vetches - - - - Application.

Cole-seed - { Feeding,
Seed.

Turnips - - { Drawn - - - - -
Fed - - - - -
Kept on grass - - -
- in houses - - - }

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XIII. Live

XIII. Live Stock.

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PERFECTION in such inquiries is not in the power of any body of men to obtain at once, whatever may be the extent of their views, or the vigour of their exertions. If Lewis XIV. eager to have his kingdom known, and possessed of boundless power to effect it, failed so much in the attempt, that of all the provinces in his kingdom, only one was so described, as to secure the approbation of posterity*; it will not be thought strange, that a Board possessed of means so extremely limited, should find it difficult, to reach even that degree of perfection, which perhaps might have been attainable, with more extensive powers. The candid Reader cannot expect in these Reports more than a certain portion of useful information, so arranged, as to render them a basis for further and more detailed inquiries. The attention of the intelligent Cultivators of the kingdom, however,

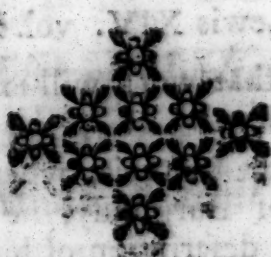
* See Voltaire's Age of Lewis XIV. vol. ii. p. 127, 128, edit. 1752.

The following extract from that work will explain the circumstance above alluded to.

“ Lewis had no Colbert, nor Louvois, when about the year 1698, for the instruction of the Duke of Burgundy, he ordered each of the intendants to draw up a particular description of his province. By this means an exact account of the kingdom might have been obtained, and a just enumeration of the inhabitants. It was an useful work, though all the intendants had not the capacity and attention of Monsieur de La-moignon de Baviile. Had what the king directed been as well executed in regard to every province, as it was by this magistrate in the account of Languedoc, the collection would have been one of the most valuable monuments of the age. Some of them are well done; but the plan was irregular and imperfect, because all the intendants were not restrained to one and the same. It were to be wished, that each of them had given, in columns, the number of inhabitants in each election; the nobles, the citizens, the labourers, the artisans, the mechanics, the cattle of every kind; the good, the indifferent, and the bad lands, all the clergy, regular and secular, their revenues, those of the towns, and those of the communities.

“ All these heads, in most of their accounts, are confused and imperfect; and it is frequently necessary to search with great care and pains to find what is wanted. The design was excellent, and would have been of the greatest use, had it been executed with judgment and uniformity.”

will doubtless be excited, and the minds of men in general gradually brought to consider favourably of an undertaking, which will enable all to contribute to the national stores of knowledge, upon topics so truly interesting as those which concern the Agricultural interests of their country; interests, which on just principles never can be improved, until the present state of the kingdom is fully known, and the means of its future improvement ascertained with minuteness and accuracy.



PRELIMINARY OBSERVATIONS

TO THE

MID-LOTHIAN RE-PRINTED REPORT.

IN the course of an address to the Board of Agriculture, when it first assembled, on the 4th of September 1793, I took an opportunity of stating the measures which seemed to me the most likely to promote the objects of that institution ; and submitted to the consideration of the Board, whether the first object ought not to be, *to ascertain facts*, without which no theory or system of reasoning, however plausible, could be depended on ; that for attaining so important an object, it would be necessary to examine into the agricultural state of all the different counties in the Kingdom, and to inquire into the means which, in the opinion of intelligent men, were the most likely to promote either a general system of improvement, or the advantage of particular districts ; that by employing a number of able men for that purpose, by circulating their reports previous to their being published, and by requesting the additional remarks and observations of those to whom such communications were sent, it was probable, that no important fact, or even useful idea, would escape notice.

The plan thus chalked out having been approved of by the Board, it was immediately set about with every possible

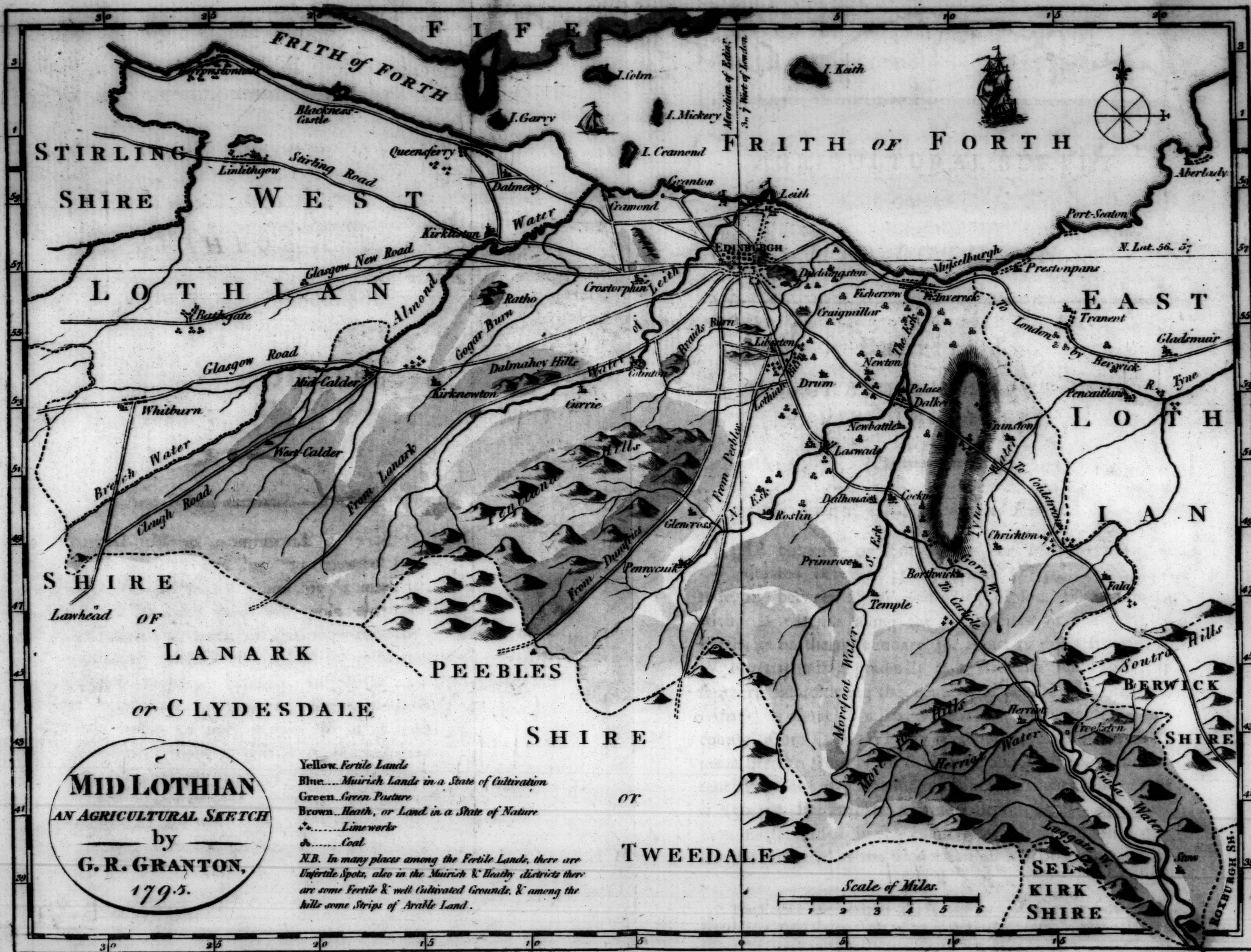
possible degree of energy. Among other intelligent individuals nominated for that purpose, Mr Robertson at Granton, near Edinburgh, was appointed to take a survey of the county of Mid-Lothian. Those who have had an opportunity of examining his original Report, will see the pains which he took to fulfil the objects of his mission. As soon as his Report was printed, it was circulated throughout the county, for the purpose of obtaining additional information; and though, from the want of the privilege of sending and receiving packets duty-free, (a privilege which, it is hoped, the Board will soon obtain, for the want of it impedes all its operations) the circulation of the Report was attended with considerable difficulty and expence; yet, on the whole, such a number of copies were returned, with valuable additional observations, as to induce the Board to form an opinion, that the work might now be rendered fit for publication.

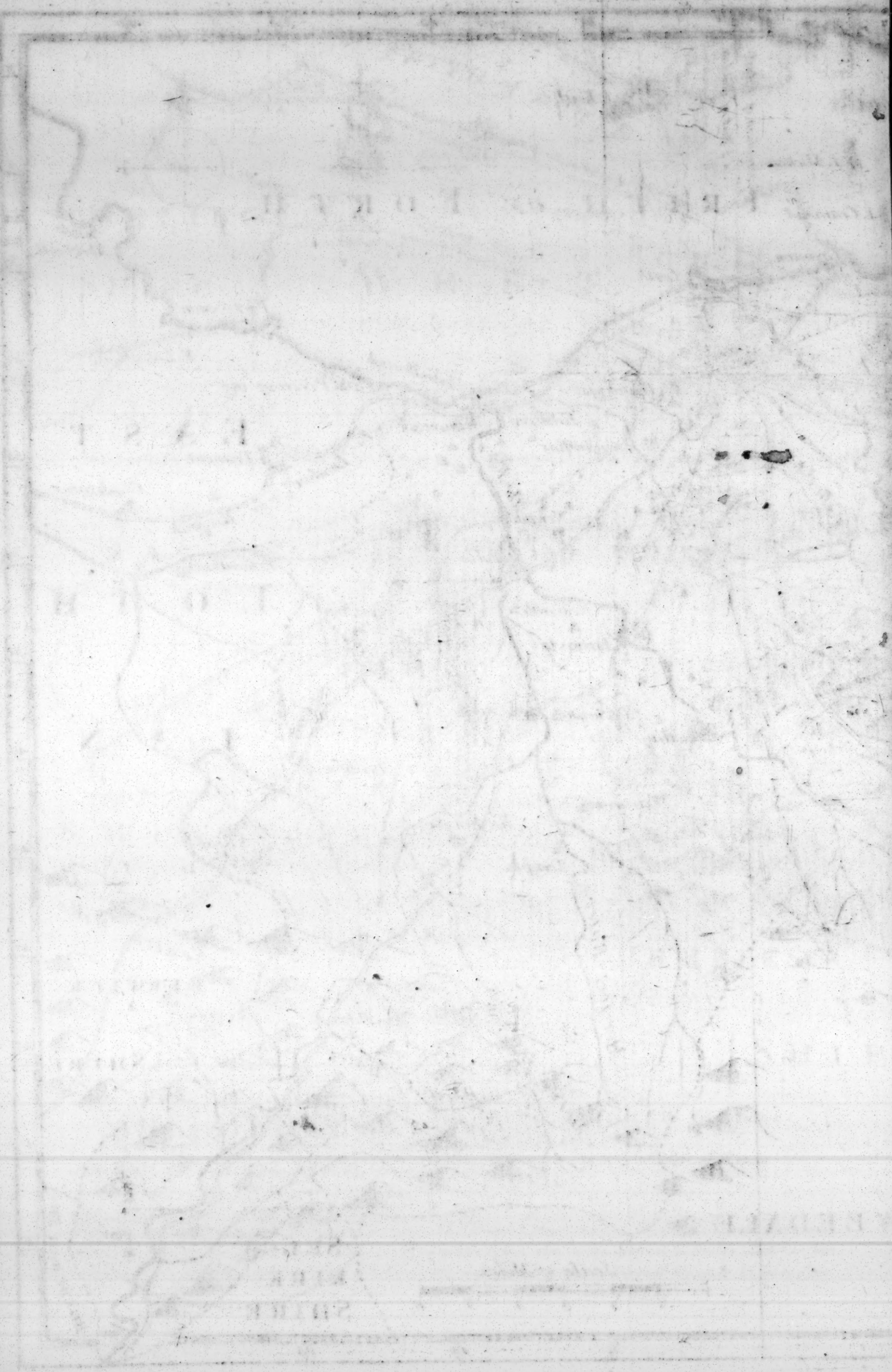
There is every reason to believe, that the accounts of the other districts in the kingdom will soon be equally complete; in which case, a greater mass of agricultural knowledge will be collected, in a space of little more than two years, than probably can be found in all preceding publications on the subject of husbandry; and thus the foundation will be laid, for a general system of improvement, on that best and surest of all foundations, a knowledge of facts.

Next to collecting information, the improvement of a country must depend upon rousing a proper spirit of exertion, in order that the information thus accumulated may be put into action. By the happy constitution of this country, and the wisdom of its laws, property is better secured here than perhaps in any other state

state that ever existed, which undoubtedly is a great spur to exertion. But the Legislature seems to have trusted too much to the beneficial effects of that security, and to think that no other encouragement or spur could be necessary. Fortunately, however, a new system has commenced. Parliament has already begun to vote some aid for the improvement of husbandry. The Legislature has at last taken the plough and the spade under its immediate protection ; and those who make any useful discovery likely to be of service to Agriculture, have now every reason to expect attention to their claims, and that encouragement which their discoveries may be found to merit.

Where both skill in agriculture, and a spirit of improvement, exist, there can be but one thing wanting, namely, capital. There is little risk, however, of any deficiency of that nature in these kingdoms, unless our capital should be diverted from its natural means of employment, *domestic improvement*, to remote and foreign speculations. The best mode of preventing such a deviation seems to be, *to make the kingdom known to its inhabitants, and to point out the benefit which they may derive from improving it.* Such are the objects of these inquiries ; which, so far as they concern the county of Mid-Lothian, seem to have made considerable progress, and indeed to have reached a very considerable degree of perfection.





AGRICULTURAL SURVEY

OF

MID-LOTHIAN.

CHAPTER I.

GEOGRAPHICAL STATE AND
CIRCUMSTANCES.



SECT. 1.—*Situation and Extent.*

THE COUNTY OF EDINBURGH, or MID-LOTHIAN, is situated between $55^{\circ} 39'$, and $55^{\circ} 59'$, of N. latitude, and between $2^{\circ} 36'$, and $3^{\circ} 33'$, of lon. W. of Greenwich. It extends along the south shore of the frith of Forth, its northern boundary, for about 12 miles from E. to W. but expanding gradually as it stretches southward; its southern line, skirting the counties of Selkirk, Peebles, and Lanark, is about 36 miles, so that the mean length of this county, from E. to W. may be about 24 miles; and as its mean breadth from N. to S. may be about 15 miles, the extent altogether may amount to about 360 square miles; that is 230,400 English, or 183,240 Scotch acres*, the common measure used in this county. Of this, one third part may be estimated as the proportion of hill, or grounds inac-

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cessible

* The English acre contains 4840 square yards of 36 inches each, and the Scotch acre 5760 square yards of 37 inches each; hence the proportion between the Scotch and English acre is very nearly as 5 to 4.

cessible to the plough; and two thirds, or about 120,000 Scotch acres, in tillage, in pasture, or in wood. The total number of parishes in the County is thirty, exclusive of the capital, in which are ten.

SECT. 2.—*Divisions.*

This County may be divided into the Upper, or Hilly, and the Lower District. The former may be arranged under two principal divisions, the Morefoot hills, and the Pentland hills. There are indeed several others altogether unconnected with them, and with one another, but which are inconsiderable, either with respect to their height or their extent.

The Morefoot hills, in the S. E. corner of the county, form a mountainous district of about 50 square miles. They are the most elevated in Mid-Lothian, being from 1400 to 1850 feet in height above the level of the sea. There are several dales or valleys interspersed among them, consisting of very good arable land; a great many even of the hills themselves have been in cultivation, and very fine crops of oats are still produced a great way up their sides, which in good seasons come to tolerable perfection. The pasture on the whole is in general found to be sweet and healthy, which has made them to have been long esteemed as fine sheep walks, and the stock bred there accounted superior to the most part of hill-fed sheep in this country. This whole hilly district is generally denominated Gala Water, from the name of the principal stream.

The Pentland hills are situated nearer the middle of the county, approaching within six miles of the sea, and about 4 miles from Edinburgh, the capital. They do not occupy so great an extent as the hills of Morefoot, not exceeding 40 square miles; neither are they so much elevated, the highest not exceeding 1600 feet; yet, from their local situation, adjoining to a flatter country, they have a more formidable appearance; and from their bleak and barren aspect, are naturally more gloomy and unpleasant.

The low part of the county is exceedingly diversified in its appearance and quality. The most level part of the lands,

as well as the richest soil, is however generally to be met with on the northern side next to the sea, where there is a stretch of about 15 or 16 miles from E. to W. and of 6 or 8 in breadth from N. to S. containing a tract of upwards of 50,000 Scotch acres of arable and fertile lands, in which are interspersed several small hills, Arthur's seat, Blackford hills, Craiglockhart, &c. which add to the natural beauty of the country, without much diminishing its value; as they yield a considerable rent from the fine pasture with which they in general abound. Farther up the country, and nearer to the hills, there is a still greater extent of plain country; which, being not only much higher situated, (from 600 to 900 feet above the level of the sea,) but also having in general a great northern exposure, it becomes very unfriendly to vegetation, although the natural qualities of the soil are far from being defective; for even there, in situations that are well sheltered by plantations, or which have a southern aspect, there are many fertile and rich spots, even to the very verge of the hills. There are however in this upland district, many extensive tracts of moor and moss, that have never yet been under cultivation, and perhaps never will.

SECT. 3.—*Climate.*

This county lying nearly as far north as lat. 56°, might well be supposed to be naturally cold. Nevertheless, the climate on the whole is far from being unfriendly to vegetation. Excessive cold and extreme heat are alike unknown.

It is the inconstancy rather than the severity of the seasons, which the husbandman has to guard against: indeed so variable is the weather in general, that hardly a single week is of the same uniform tenor; and very frequently the same day is known to display a vicissitude of temperature of the most opposite tendency and effect. There is however a general state of weather that takes place according to the different seasons of the year. Snow seldom falls upon the low part of the county before the first of December, and is rarely later than Christmas. The time of its continuance is however very uncertain;

in some years it lies 10 weeks, and in others not three days. Three weeks is reckoned a moderate length for the *storm* to last, the name by which a great fall of snow is denominated. In January and February the weather is exceedingly uncertain; sometimes calm, clear, fine growing weather, but more generally hard frost and snow. In March and April, cold frosty mornings succeeded by warm sunshine through the day, is the general state of the weather, by which the wheat fields very frequently suffer. In May, cold piercing east winds frequently prevail, often attended with heavy deluges of rain, particularly unfavourable to the grounds at that time, which being either under immediate tillage, or but recently ploughed, are liable to much injury from such superabundant moisture. June, though enjoying the longest days of the year, is often remarked for the chill cold of its mornings, which, being such a contrast to the noon-tide heat which succeeds, has the effect to nip and blast the yet young and tender shoots of corn, unable to withstand such contrariety of weather. July and August are the warmest months, and would be exceedingly pleasant, were it not that the fine weather is so frequently interrupted by the thunder showers which are prevalent at that season. In September the weather appears to run into extremes; in some years there is hardly a shower through the whole month, and in others it has been rainy almost every day. October, November, and December, are in general pretty similar to one another; heavy rains with intervals of calm moderate weather succeed in rotation.

The following tables will show in a more explicit manner the state of the climate of Mid-Lothian, as well with regard to the proportion of fair and rainy weather, as to the respective degrees of heat and cold which prevail in the different months of the year. They are taken from observations made in eight successive years, from 1785 to 1792, inclusive, in the immediate vicinity of Edinburgh; and from that circumstance must be held as stating the climate somewhat more favourable than it is, in the greater part of the county, the higher grounds in particular being not only some degrees colder, but also exposed to a greater quantity of rain.

TABLE

TABLE I.

The Quantity of Rain.

	1	2	3	4	5	6
January, -	13.75	1.389	24	3	2.25	0.11
February, -	16.625	1.58	28	8	2.31	0.88
March, - -	13.5	1.2475	20	7	2.39	0.37
April, - - -	14	1.544	20	3	2.89	0.44
May, - - -	14	1.963	19	6	4.73	0.5
June, - - -	13	2.24	20	4	4.76	0.15
July, - - -	16	2.43	21	10	4.79	0.17
August, - -	14.25	2.375	21	9	3.31	1.17
September, -	14.25	3.11	21	5	10.72	0.6
October, - -	15.12	2.46	21	7	4.33	0.41
November, -	13	2.61	20	9	5.23	0.58
December, -	17.5	2.84	21	14	8.42	1.11
Average per Annum,	} 175.	25.75				

In this table, opposite to each month respectively, Column 1. shows the number of rainy days on an average of eight years. Col. 2. the average quantity of rain in inches deep. Col. 3. the greatest number of rainy days that took place monthly in eight years. Col. 4. the least ditto. Col. 5. the greatest quantity of rain in inches deep. Col. 6. the least ditto.

The greatest number of rainy days in any of the 8 years above, was in 1789, the number being 222, producing however only 23.92 inches deep of water. The greatest quantity of rain was in 1792, being 36.8 inches, tho' there were only 185 days of rain. The least quantity of rain that fell in any of these eight years was in 1786, when there were only 9.62 inches; and also the smallest number of rainy days, which was only 136*.

TABLE

* In rainy days are not included, fog, mist, or such small rains as cannot be easily measured, but which are very frequent in this country, so that the climate is still more humid than from the above table would appear.

TABLE II.

Heat and Cold.

	1	2	3	4
January, - -	37	34.5	51	11
February, -	42	37	59	20
March, - -	42.5	33.5	59	14
April, - - -	50	39	77	29
May, - - -	57	48	73	32
June, - - -	60.5	50.5	89	40
July, - - -	64	53	83	45
August, - -	65	53.5	81	43
September, -	60	50	77	34
October, - -	52	45	65	21
November, -	45	39	61	20
December, -	39	35	53	14

The above table refers to the observations made from a thermometer in which the freezing point is fixed at 32° , and blood heat at 96° . Col. 1. opposite to each respective month, shows the degree of heat at noon. Col. 2. the degree of cold at sunrising at an average of 8 years, from 1785 to 1792 inclusive. Col. 3. the highest degree the thermometer has attained to, and col. 4. the lowest point to which it has fallen during the said period.

The climate may be still farther judged of from the date of the common occurrences in husbandry. Spring corns, as oats, beans, and pease, are generally sown from the middle of February to the middle of April, barley during the whole month of May. The hay harvest is in July, and corn harvest from the 20th of August to the middle of October. The wheat seed time is commonly during the months of October and November, though sometimes, when on summer-fallow, as early as the 1st of September, and in other instances as late as Christmas, with very good success.

SECT.

S E C T. 4.—*Soil and Surface.*

The soil is much diversified. It is not easy to determine which is most prevalent, clay, sand, loam, or gravel, as they are all to be seen in the same farm, and frequently in the same field, with many variations of quality, which are likely to be improved by the effects of cultivation and manure, till perhaps, in the end, the whole may be reduced in no small degree to loam. One remarkable circumstance may be observed here in the soil, though by no means peculiar to this county, that the lands hanging to the north are almost always the most fertile, producing better crops than those which have a southern exposure.

The surface of this county varies. Almost the whole of it may be seen at once from the summit of Allermore, the most elevated of the Pentland hills to the north. Its waters may be traced by the fringe of wood with which their banks are generally ornamented. The numberless villas in the vicinity of Edinburgh, and Gentlemen's seats, all over the county, are seen beautiful and distinct, each in the midst of its own plantations. These add still more to the embellishment of the scene from the manner in which they are disposed; not in extended and thick plantations, which turn a country into a forest, and throw a gloom upon the prospect; but in clear and diversified lines, in clumps and hedge-rows, or waving in clouds on the brows of hills and elevated situations, useful as well as ornamental; protecting, not injuring, cultivation. In fact, Mid-Lothian, when viewed on a fine summer day, from almost any of its hills, displays a prospect of as many natural beauties, without being deficient in those embellishments which arise from industry and cultivation, as perhaps can be met with in any tract of the same extent in Great Britain. The expanse of the Forth, which forms the northern boundary, and which is here from 6 to 10 miles in breadth, adds highly to the natural beauty of the scene; and the capital, situated upon an eminence adjoining to an extensive plain, rises proudly to the view, and gives a dignity to the whole.

Descending

Descending from the hills to the low country, the surface, which had the appearance of an uniform plain, undergoes a remarkable change to the eye. The fields are laid out in various directions, according to the natural figure of the ground, which is unequal, irregular, and inclined to every point of the compass. The most part, however, of the land lies upon a gentle slope, either to the N. or the S. in banks which are extended from W. to E. all over the county. This inequality in the surface contributes much to the ornament of the country, by the agreeable relief which the eye ever meets with in the change of objects; while the universal declivity, which prevails more or less in every field, is favourable to the culture of the lands, by allowing a ready descent to the water which falls from the Heavens.

SECT. 5.—*Minerals and Fossils* *.

A continued bed of coal extends across the whole county from Carlops to Musselburgh, in a direction from S. W. to N. E. near 15 miles in length, and from 7 to 8 in breadth†, the water of N. Esk flowing nearly in the centre. It is chiefly, however, towards the lower end of this strath, or vale, that the coal is wrought, and there it consists of from 20 to 25 seams, partly on edge, and partly flat, from 2 to 10 feet in thickness, that have been used, most of which are very accessible, and some have been excavated to the depth of 26 fathoms below the sea mark. It is not ascertained for what period of time coal has been wrought in this county, but in one particular estate, (Pendriech, in the parish of Laswade,) it must have been above 200 years. The quantity at present thrown out must be very considerable. In the parish of Laswade it is stated at 30,000 tons yearly, valued at the pit-head

* The facts in this section are taken chiefly from the Statistical Account of the different parishes in the county.

† Supposing only one half of this coal accessible, and every square yard of surface to contain one ton of coal, the amount, in whole, would be 162,000,000 tons; sufficient to serve Mid-Lothian for 800 years to come, at its present rate of consumption.

head, at about L. 6500, and, when delivered in Edinburgh, at double that sum. Supposing this parish to furnish 1-6th of the whole, which I should apprehend to be nearly the proportion, it would amount to 180,000 tons, and the prime cost to L. 39,000.

Limestone is likewise abundant, and although a great proportion of it lies in the same tract with the coal, yet much of it appears in other situations, particularly nearer to the hills on the S. E. by Middleton, Chrichton-Dean, and Fala, and also to the S. W. by E. Calder; at none of which places has coal yet been found. The quantity burnt must be great. In Libberton parish alone, 100,000 bolls of flacked lime are annually sold. There are probably four times that quantity in the county, the yearly prime cost of which cannot be less than L. 10,000.

Free Stone is also had in great plenty, and of a quality that is excellent. The principal quarries are at Hales, in the parish of Collinton; and Craigleith, in the parish of St Cuthberts: the former, once unrivalled for building, as it still is for flagstone: the latter, from its superior whiteness, and supposed durability, has of late been more in request. Those splendid buildings, liker palaces than private dwellings, of which the New Town of Edinburgh is composed, owe much of their superior elegance, to the beauty of those exterior materials. The six columns in the front of the New College, each of them consisting of one entire stone, 23 feet by 3, are from the quarry of Craigleith, and are believed to be superior to any thing of the kind in Britain.

Granite, whinstone, &c are to be had in every parish in the county, and are applied to building as well as paving of streets; to which last purpose they are peculiarly applicable, and serve not only for the use of the town of Edinburgh, but have also been transported, in considerable quantities, for paving the streets of London. Millstones are produced in the parish of Pennycuick, likewise petrifications, and beautiful specimens of marble: any conjecture as to what may be the value of the annual produce of these quarries must be very uncertain; it is however said, that the gross sales of the Craigleith quarry, at

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a time

a time when building was going on rapidly, was L. 50 weekly at an average. I do not avouch this to be a fact, but I believe it to be probable, as, from the more extensive demand for stones from that quarry, there can be little doubt, that it was the most flourishing in the county : from the many quarries that were resorted to besides this, and from the quantity of lime used for building, which has been pretty accurately ascertained, I should suppose that free stone alone has, at a very late period, been sold at the quarry for upwards of L. 5000 yearly. The other kinds would probably never exceed in value above L. 500.

Copper is mentioned as existing in several parishes, but it does not appear that it abounds to any considerable extent. Iron is much more frequent, particularly in the vicinity of coal, and along the shore from Leith westward, to Granton, where the ore is of such a richness as to produce 8 Cwt. of iron the ton. Gems are very rarely met with. The Arthur-seat pebble, a species of jasper, is perhaps the only one that is gathered, and even it, to a very limited extent.

In regard to fossils, there is certainly marle in the county. The minister of Ratho found shell marle in his glebe ; and it is supposed that an extensive meadow, belonging to Mr Mac-night of Ratho, the surface of which is peat, has marle at the bottom. The meadow near Edinburgh, formerly a lake, but at present formed into walks for recreation, or health, to the inhabitants of that city, has shell marle in it, which, notwithstanding the abundance of other manures, might be well worthy the attention of the farmers in the neighbourhood.

SECT. 6.—*Water.*

The streams of this county are all inconsiderable. The term *river* is never applied ; the greater being called *waters*, the lesser, *burns*. The principal waters are the following : Almond water, which forms chiefly the west boundary of the shire, between this county and West-Lothian, is not very large ; yet as it flows for a considerable way through a flat rich country, it is very apt, in *speats* or land floods, to overtop its banks,

banks, by which great damage is done to the adjoining lands, the crops of which are hence frequently swept to the sea. The water of Leith is of still less magnitude. Its whole course does not exceed 20 miles, but it flows in a deeper channel than the former; and for the greater part, its banks are finely fringed with wood. It has all the way a considerable descent, so as to serve for the turning of mills, of which there are a great many of different kinds erected upon it. The Esk* is the most considerable water in the county, and also the most beautiful. It is formed of two others of the same name, the North Esk and the South Esk; the former rising from the Pentland hills, the latter from those of Morefoot. Both of these, after flowing separately for 12 or 15 miles, unite together under the common name of Esk, near Dalkeith, about 3 miles and a half from their influx to the sea at Musselburgh. During almost their whole course, both before and after their junction, they glide in a deeply indented channel, worn out of the solid rock, delightfully shaded with wood. The north Esk in particular, is remarkable for the romantick beauty of its banks, as it flows by Roslin, Hawthornden, Liffwade, Melville, and Dalkeith.

These are the chief rivers which flow to the north. The Tyne, which takes an eastern direction through East-Lothian, rises in this county, in which it continues for 5 or 6 miles of its course, beautifully ornamented with wood.

The Gala, augmented by the Herriot and the Luggate, is the only rivulet which runs to the south. It rises in the northern limb of the Morefoot hills, and after a course of about 15 miles, falls into the Tweed below Galashiels. About 10 miles of its course are in the county of Edinburgh. With hardly a single shrub to ornament its banks, this is, nevertheless, a beautiful meandering stream, rolling its pure, limpid waters through a narrow dale, hemmed in by green hills on either side.

Such are the principal rivulets, which not only diversify and ornament the face of the country, but serve also, by the

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confi-

* The word Esk is derived from the Gaelic, in which language *Esk*, or *Uisk*, means *water*. Hence *Uisquebaugh*, the water of life.

considerable fall which they in general have, to turn the machinery of the various mills erected upon them; in which view they are of much importance to the agriculture of the county. With respect to navigation, they are of no moment whatever; as hardly in any of them is it practicable to employ even the smallest boat. In the Gala and in the Esks, there may be considerable numbers of trout; but very few of these, or of any other fish, are to be found in the other rivulets. The quantity of salmon is also very limited, and chiefly confined to the Esk at Muffelburgh, where the fishing is esteemed to be highly rented at L. 14. a year. A few come up the Gala from the Tweed.

The advantages which this county derives from its vicinity to the sea ought also to be mentioned, though they are so apparent as to require no particular illustration. The proposed canal from Edinburgh to Clydesdale, should it be carried into execution, will be of immense advantage to both the counties of Lanark and Mid-Lothian; not only as opening an easy means of conveyance, for the different products at present in the country, but also from the vast quantity of coal, ironstone, limestone, &c. that may be procured from the lands adjacent to the proposed tract, and which are at present locked up, merely for want of such a mode of carriage.

CHAPTER II. STATE OF PROPERTY.

SECT. I.—*Estates.*

IN order to give a better view of the state of property in this county, we shall arrange the various estates in it under distinct heads or classes.

FIRST CLASS.

Estates of upwards of L. 2000 Scotch of valuation.

No.	Valuation.	No.	Valuation.
1.	L. 9080 5 1	11.	L. 3383 3 1
2.	6604 17 3	12.	3303 14 7
3.	6092 9 2	13.	2996 13 4
4.	5727 12 8	14.	2737 8 8
5.	4675 7 8	15.	2675 0 0
6.	4240 3 8	16.	2468 18 0
7.	4229 15 0	17.	2462 3 4
8.	3765 15 0	18.	2453 17 8
9.	3764 12 7	19.	2423 18 4½
10.	3487 9 7	20.	2183 13 9
L. 78,756 18 5½			

SECOND CLASS.

Estates from L. 1000 to L. 2000 Scotch of valuation.

No.	Valuation.	No.	Valuation.
1.	L. 1974 0 0	14.	L. 1483 6 8
2.	1832 14 10	15.	1455 0 0
3.	1817 12 0	16.	1447 0 0
4.	1803 0 0	17.	1437 3 0
5.	1749 17 8	18.	1341 0 0
6.	1671 8 8	19.	1315 6 8
7.	1669 1 2	20.	1312 10 0
8.	1630 13 4	21.	1304 1 0
9.	1600 10 1	22.	1235 3 4
10.	1579 0 0	23.	1225 0 0
11.	1570 4 10	24.	1138 6 8
12.	1511 9 4	25.	1028 7 3
13.	1504 17 8		

THIRD

THIRD CLASS.

Estates from L. 400 to L. 1000 Scotch of valuation.

No.	Valuation.	No.	Valuation.
1.	L. 964 10 0	26.	L. 518 7 0
2.	927 3 4	27.	500 17 8
3.	904 3 $8\frac{1}{4}$	28.	500 0 0
4.	856 0 0	29.	498 19 9
5.	850 0 0	30.	488 0 10
6.	820 3 4	31.	485 0 0
7.	812 0 0	32.	475 16 8
8.	774 6 3	33.	467 13 0
9.	765 2 0	34.	458 2 $3\frac{1}{2}$
10.	751 15 6	35.	447 0 0
11.	744 6 8	36.	445 2 11
12.	735 1 4	37.	445 0 0
13.	724 14 4	38.	444 9 10
14.	713 4 10	39.	435 0 0
15.	703 0 0	40.	430 13 6
16.	697 6 4	41.	419 0 0
17.	661 18 8	42.	412 6 8
18.	660 0 0	43.	412 0 0
19.	618 14 0	44.	408 3 0
20.	612 6 8	45.	407 11 7
21.	582 18 6	46.	403 0 0
22.	581 11 8	47.	401 5 0
23.	566 13 4	48.	400 0 0
24.	564 0 0	49.	400 0 0
25.	539 11 10		
			L. 28,834 1 $11\frac{1}{4}$

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Estates from L. 200 to L. 400 Scotch of valuation.

L 13,639 4 10 1/4

FIFTH

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FIFTH CLASS.

Estates from L. 100 to L. 200 Scotch of valuation.

No.	Valuation.
1.	L. 195 0 0
2.	193 6 8
3.	190 13 4
4.	184 0 0
5.	174 12 8
6.	173 14 2
7.	173 10 0
8.	171 5 10
9.	170 2 5
10.	169 11 0
11.	168 9 9
12.	165 0 0
13.	165 0 0
14.	161 10 0
15.	160 0 0
16.	156 0 0
17.	154 8 0
18.	152 5 6
19.	150 0 0
20.	149 14 4
21.	149 6 8
22.	148 4 8
23.	143 8 8
24.	142 18 6
25.	142 10 0
26.	142 7 1
27.	141 10 0
28.	141 0 0
29.	140 11 6
30.	140 0 0
31.	140 0 0
32.	135 6 8
33.	135 4 8
34.	134 12 1

No.	Valuation.
35.	L. 134 6 8
36.	131 0 0
37.	130 10 0
38.	130 0 0
39.	130 0 0
40.	129 14 0
41.	126 4 8
42.	126 0 0
43.	125 4 4
44.	122 0 0
45.	120 19 5
46.	120 13 4
47.	120 0 0
48.	120 0 0
49.	117 2 0
50.	117 0 0
51.	114 5 9
52.	113 11 0
53.	113 8 4
54.	109 6 2
55.	108 13 4
56.	105 15 9
57.	105 6 7
58.	103 19 0
59.	103 16 0
60.	101 0 0
61.	100 0 0
62.	100 0 0
63.	100 0 0
64.	100 0 0
65.	100 0 0
66.	100 0 0
67.	100 0 0

L. 9135 0 6

SIXTH

SIXTH CLASS.

Of the properties under L. 100 Scotch of valuation, (320 in number,) it would be tedious to specify the particulars; so we shall only mention, that the total valuation of this class is L. 12,431 19s. 4d. of these more than one half (168) lie in the parish of St Cuthberts, or West Church.

SEVENTH CLASS.

Hospital Lands, &c.

1. Herriot's Hospital, Edinburgh,	L. 2753 18 0
2. Watson's Hospital, ditto, - -	1873 12 0
3. Town of Muffelburgh, - -	1467 0 6
4. The King's Park, - -	1000 0 0
5. The Bishop of Edinburgh, - -	997 0 0
6. Trinity Hospital, Edinburgh, -	658 6 8
7. The Archbishop of St Andrews,	478 6 8
8. The Town of Edinburgh for the Calton,	458 18 7
9. Seaman's Hospital Leith, -	450 18 8
10. Craigcrook Mortification, -	336 0 0
11. Orphan Hospital, Edinburgh, -	87 10 0
12. The Bishop of Dunkeld, -	66 13 4
	L. 10,628 4 5

Recapitulation.

20 of first class,	L. 78,756 18 5 $\frac{1}{2}$
25 of second class,	37,628 14 2
49 of third class,	28,834 1 11 $\frac{1}{4}$
49 of fourth class,	13,639 4 10 $\frac{1}{4}$
67 of fifth class,	9,135 0 6
320 of sixth class,	12,431 19 4
12 of seventh class,	10,628 4 5
542	Total, L. 191,054 3 9

This valuation appears to have been taken in 1649, by Commissioners appointed by the Scotch Parliament; these Commissioners took an oath, binding themselves to use their best endeavours to obtain right and true information of the whole rents of the respective counties allotted to them, and these for the three Lothians were directed to convert the rent payable in victual in these shires into money, at the following rates, viz. wheat at 11 s. 4 $\frac{1}{2}$ d. bear, rye, and pease, at 8 s. 10 $\frac{1}{2}$ d. and oats and meal at 7 s. 9 $\frac{1}{2}$ d. sterling, the boll, rates little more than half of the fiars of Mid-Lothian for that year (vide Wood's Ancient and Modern State of the Parish of Cramond, p. 100. a work highly esteemed for enlightening research.) The total valuation of Scotland is about L. 3,872,600 Scotch, of which L. 191,054, 3 s. 9 d. is a fraction more than the twentieth part; and Mid-Lothian ranks as the seventh of the 33 Counties into which Scotland is divided, the shires of Fife, Perth, Roxburgh, Dumfries, Aberdeen, and Ayr, being superior in valuation.

From the most probable calculation that can be made, the proportion of the old valued rent, to the present real rent, is nearly L. 9 Scotch of the former, to L. 7 sterling of the latter; but, for a more minute state of this, the Statistical Tables, and observations therewith connected, are referred to.

Property in Mid-Lothian has of late undergone many fluctuations; nearly two thirds of the whole county have been transferred by sale during the course of the present century. Within the last ten years, in the parish in which the Author of this report resides, and in two adjacent ones, 2925 acres, the valued rent of which amounts to L. 6477 10 s. Scotch, sold for L. 147,192 sterling. During the same period, one gentleman purchased property in this county, rated at L. 4240 3 s. 8 d. Scotch, price not known; another paid L. 130,590 sterling for estates whose valuation is L. 6604 17 s. 3 d. Scotch; and the Marchioness of Titchfield acquired the noble estate of Hatton, rated at L. 3303 14 s. 7 d. Scotch, for L. 84,000 Sterling*.

There

* The total valued rent thus sold is L. 16,386 1 s. 10 d. Scotch, and the price L. 361,692 Sterling, which is about L. 22 Sterling of price, for each

There are, however, some families still remaining in this county that lay claim to high antiquity, and not a few who have enjoyed their property for more than a century; such as

The Duke of Buccleugh, our much-respected Lord Lieutenant, the first both in point of rank and extent of valuation in the shire.

The Marquis of Lothian.

The Earls of Dalhousie, Morton, and Roseberry.

Lords Somerville and Torphichen.

The families of Foulis of Colinton, Nisbet of Dean, Clerk of Pennycuik, Inglis of Cramond, Lauder-Dick of Fountainhall, Baird of Saughtonhall, Dalrymple of Cranston, and Dick of Prestonfield,—*Baronets of Nova Scotia*.

Those of Dundas of Arncliffe, M. P. Lord Advocate of Scotland, the highly-esteemed Representative in Parliament for the county.

Borthwick of Crookston *.

Wauchope of Niddry, and Wauchope of Edmonstone.

Howison of Braehead.

Watson of Saughton.

Little of Libberton.

Craig of Riccarton.

Trotter of Mortonhall.

Scott of Malleny.

Law of Lauriston.

Wilkie of Rathobyres, and

Abernethy Drummond of Hawthornden.

each pound Scotch of valued rent. At the same rate, the whole county of Mid-Lothian, valued at L. 191,054, 3s. 9d. will be worth L. 4,203,192 Sterling, and Scotland altogether, L. 85,197,200.

* Representative of the very ancient and most honourable family of Borthwick, Lords of Borthwick, who at one time had immense possessions in this county, which were afterwards greatly diminished through their opposition to the Usurper and democratick tyrant Oliver Cromwell. See the Statistical Account of Scotland, Vol. 13. Borthwick Parish.

The number of freeholders amounts to 104, and principally consist of respectable proprietors, who, though inclined to support the established Laws and Government of their country, yet maintain the ancient independent spirit of the Barons of Scotland.

There are other respects, besides the mere income enjoyed by each individual, in which landed property may be considered; for instance, the proprietors may be, 1. Constantly resident; or, 2. Occasionally resident only; or, 3. Generally absent. In Mid-Lothian, fortunately, a very small proportion of the county is possessed by constant absentees.

Landed property, also, may either be strictly entailed, or may not be subject to any restriction of that nature. It is believed that 3-8ths of the whole valuation of the county is entailed, or tied down to a particular destination of heirs, hence the proportion may be stated as follows:

Lands entailed, supposed, - - -	L. 70,000 0 0
----- unentailed, - - -	121,054 3 9
Total valuation	<u>L. 191,054 3 9</u>

Lands, also, may either be in the possession of corporate bodies, or of private individuals.

The proportion in Mid-Lothian is as follows:

	Valuation
Hospital and town's lands, including lands be- longing to the Crown. - - -	L. 10,628 4 5
Property of private individuals, - - -	180,425 19 4
	<u>L. 191,054 3 9</u>

As the greater part of the proprietors of this county either are, or have been, in the army, the navy, or employed in the numerous and respectable departments of the law, in the various offices of the revenue, in banking, or in commerce, there are but few of them who have leisure to apply to agriculture; therefore

therefore the lands are commonly let to husbandmen, who farm them on leases. This is the case with perhaps eight ninths of the whole ; the only grounds retained by the proprietor being, in general, a few small inclosures around the mansion-house, commonly kept in pasture ; or, in some cases, a few acres in tillage, for his amusement in making experiments in husbandry. Even the house and gardens are frequently let in lease, the owner finding himself accommodated in some other place, more suitably to his taste or circumstances.

The connexion between landlords and tenants subsists here, for the most part, on an amicable footing. The former pay a due attention to the interests of the latter, act towards them in a friendly manner, and exact their rights with lenity and moderation ; whilst the tenants retain and cherish a respect for the *lord of the manor*, which is seldom violated, but in cases, where they are used with harshness or severity ; which does indeed sometimes happen, although it is generally, in such cases, not easy to decide which of the parties is most in the wrong.

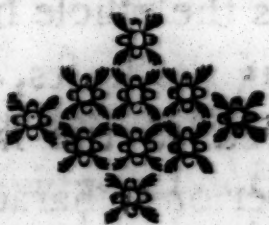
To every estate there is commonly a factor, or land steward, appointed, who transacts the whole business with the tenants, letting the lands, writing the leases, and receiving the rents and who is generally bred to the law, and resides in town. Much depends on the personal character of this steward, both as affecting the welfare of the tenants, and the prosperity of the estate. Under the administration of a man of affability, of discernment, and of intelligence in rural affairs, the tenants are encouraged, and the lands are cultivated with zeal ; with a factor of a contrary disposition and opposite qualities, the tenants being harrassed and dispirited, the land itself suffers in the perpetual contest between them, and the frequent changes he occasions.

SECT. 2—*Tenures.*

Lands held either as freehold, or in feu, (the latter resembling in many particulars the English copy-holds,) are the two principal tenures known to the law of Scotland, burgage and allodial holdings being comparatively of small extent, nor

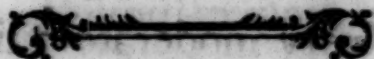
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is there any, it is believed, of either of those tenures in Mid-Lothian. Of the 542 different estates above enumerated, only 104 are freehold, at least to the extent of Parliamentary qualification. The others, chiefly of small value, are held, not immediately from the Crown, but in feu of private individuals, subject generally to a very moderate quit-rent, but hence entirely deprived of any connexion with the bustle of political contests.



CHAP. III.

BUILDINGS.

SECT. I.—*Houses of Proprietors.*

THIS county has an uncommonly brilliant appearance, from the great number of country seats with which it abounds, belonging to the different Noblemen or dignified and opulent gentry, whose respective palaces, castles, and villas, in general beautifully incircled with natural woods or plantations, adorn and highly embellish the face of the country. To enumerate the whole, consisting of several hundreds, would be too tedious; nor could the writer of this report pretend to a description of them that would be interesting; he will merely state, that the most princely edifices, pertaining to the nobility, are; the Duke of Buccleugh's at Dalkeith; the Marquis of Abercorn's at Duddingston; the Marquis of Lothian's at Newbattle; the Earl of Morton's at Dalmahoy; the Earl of Dalhousie's at Dalhousie Castle, and Lord Somerville's, at Somerville House.

Among the lesser Barons and gentry, perhaps Pennycuik, Sir John Clerk; Arniston, the Lord Advocate; Melville Castle, Mr Secretary Dundas; Westerton, Col. Callendar; Oxenford Castle, Sir John Dalrymple; the Craig, Mr Inglis; Warriston, Mr Muir; Bellvue, Mrs Gen. Scott; and Beachwood, late Gen. Leslie;—may rank as the first, for the elegance of the architecture, and ornamental disposition of the plantations and surrounding grounds.

Of ancient edifices fallen into decay, the most distinguished are, Roslin-Castle, once, and for long, the splendid residence of the chief of the ancient and princely House of St Clair; Craigmillar Castle, a royal mansion; and the Castles of Borthwick and Chrichton, formerly pertaining to chiefs of the same names, celebrated in Scottish History.

SECT.

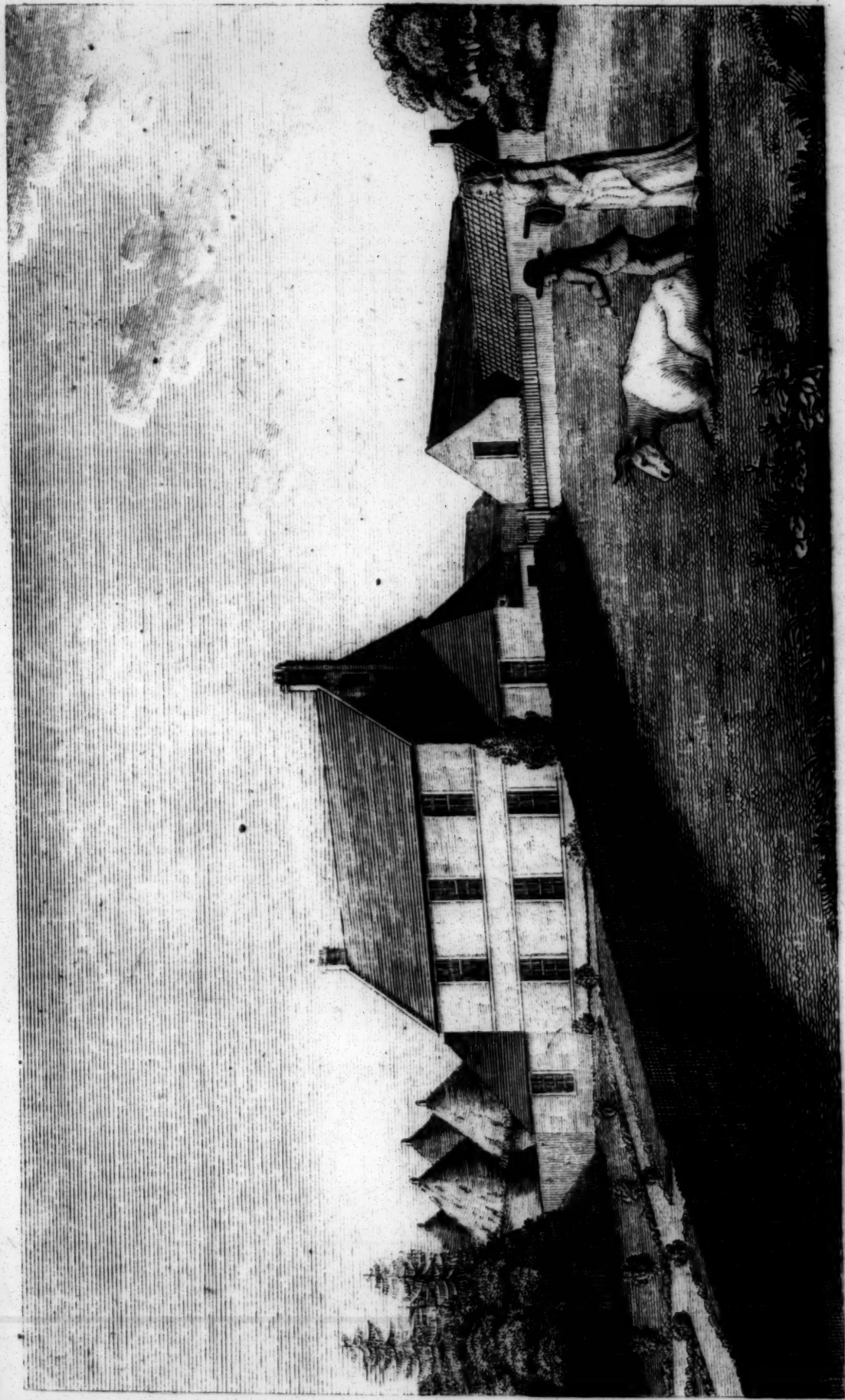
SECT. 2.—*Farm Houses and Offices, and Repairs.*

A Farmer's *mains*, as it is here called, consisted formerly of a set of low buildings, in the form of a square. One side was occupied by the master himself, whose habitation was composed of two or three dismal apartments, on an earthen floor, having a low ceiling, and a few diminutive lights. On another side stood the barn, in which the roof-timbers, from the idea of giving more strength, were built into the wall from the foundation; the wall itself not being more than 5 feet in height. Opposite to the barn were the stables, and the byre or cow-house. The stables were totally without division, and the horses fed in common; but the neat-cattle, less passive, were each confined to their stakes. The cottages occupied the remaining side: in the midst of all lay the dung-hill. These buildings were made of turf and stone alternately, or with stone and clay for mortar:—the roof of thatch, or of thatch and *divot* (turf or sods,) intermixed*.

The farm house and offices still, are generally disposed in the form of a square: in some cases open at the side opposite to the

* It was also very common, in times still more remote, to have a number of these farm houses placed together in a village, generally in the vicinity of the laird's house or castle, the more readily to serve for his protection, or to protect one another from thieves or other banditti, with which the country was infested.

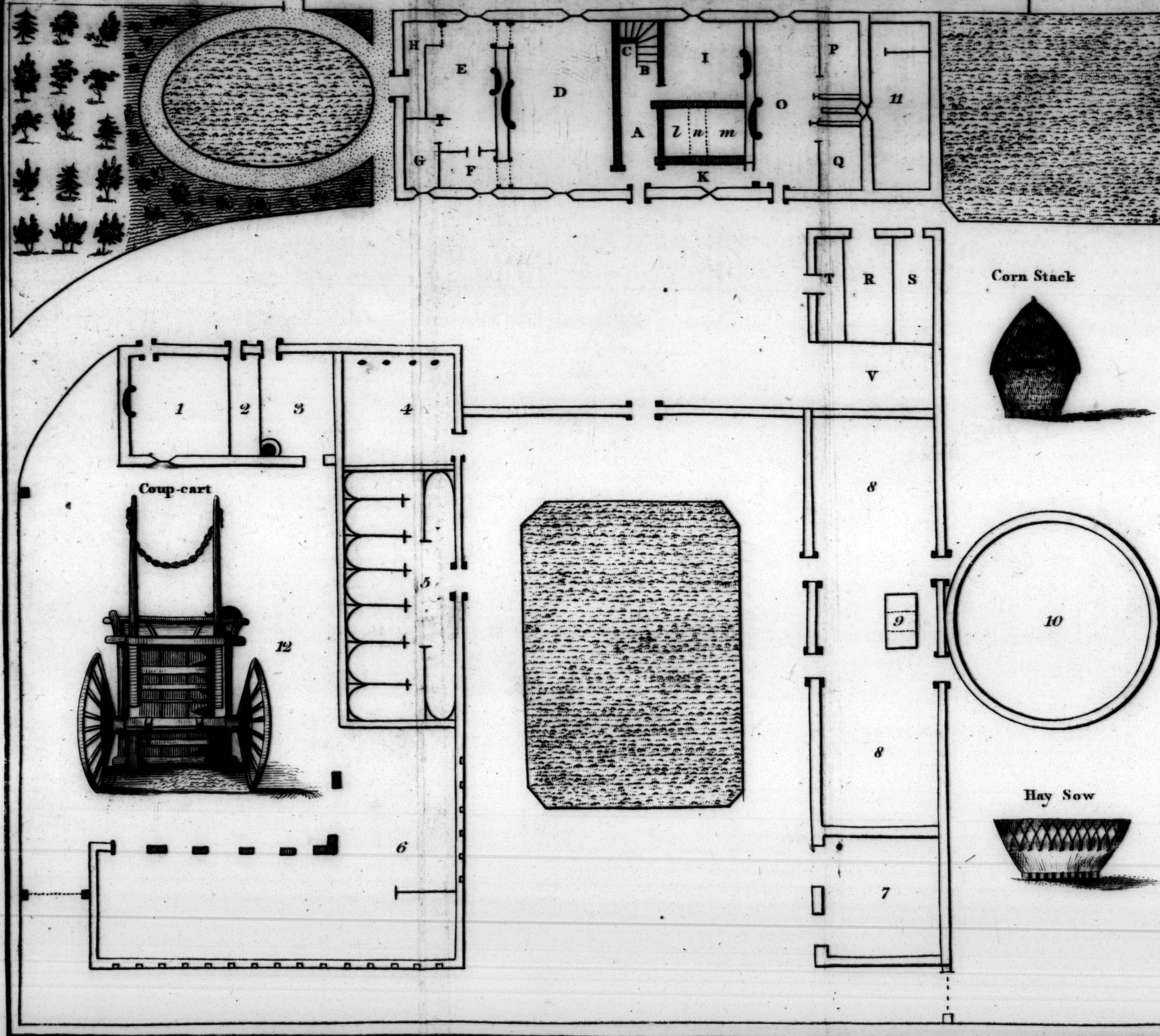
Among the many improvements which have been made in the present century, it is none of the least, that the internal police of the kingdom has become more effective. The bands of robbers and other vagrants have been extirpated, private property more completely protected, and the peaceful inhabitants of the country, have been enabled to apply themselves to their vocations in security, and without alarm. It has become no longer necessary, that the whole farmers on an estate should be cooped up in the same village. They may now settle, each in the midst of his own farm, in a manner much more to the advantage of the farmer, and more favourable to the embellishment of the country. This has, however, been productive of no little grief of mind to the declaimers against the present times; who never perceive any thing in an alteration but what is ruinous. They deplore the remains of the farm house, in the different villages, and the supposed consequent depopulation of the country; never adverting, that the inhabitants are only removed to a better situation than what they formerly enjoyed.



GOGAR BANK.

Cumberland Reid Esq. — Mr. Alex. Dudgson tenant —

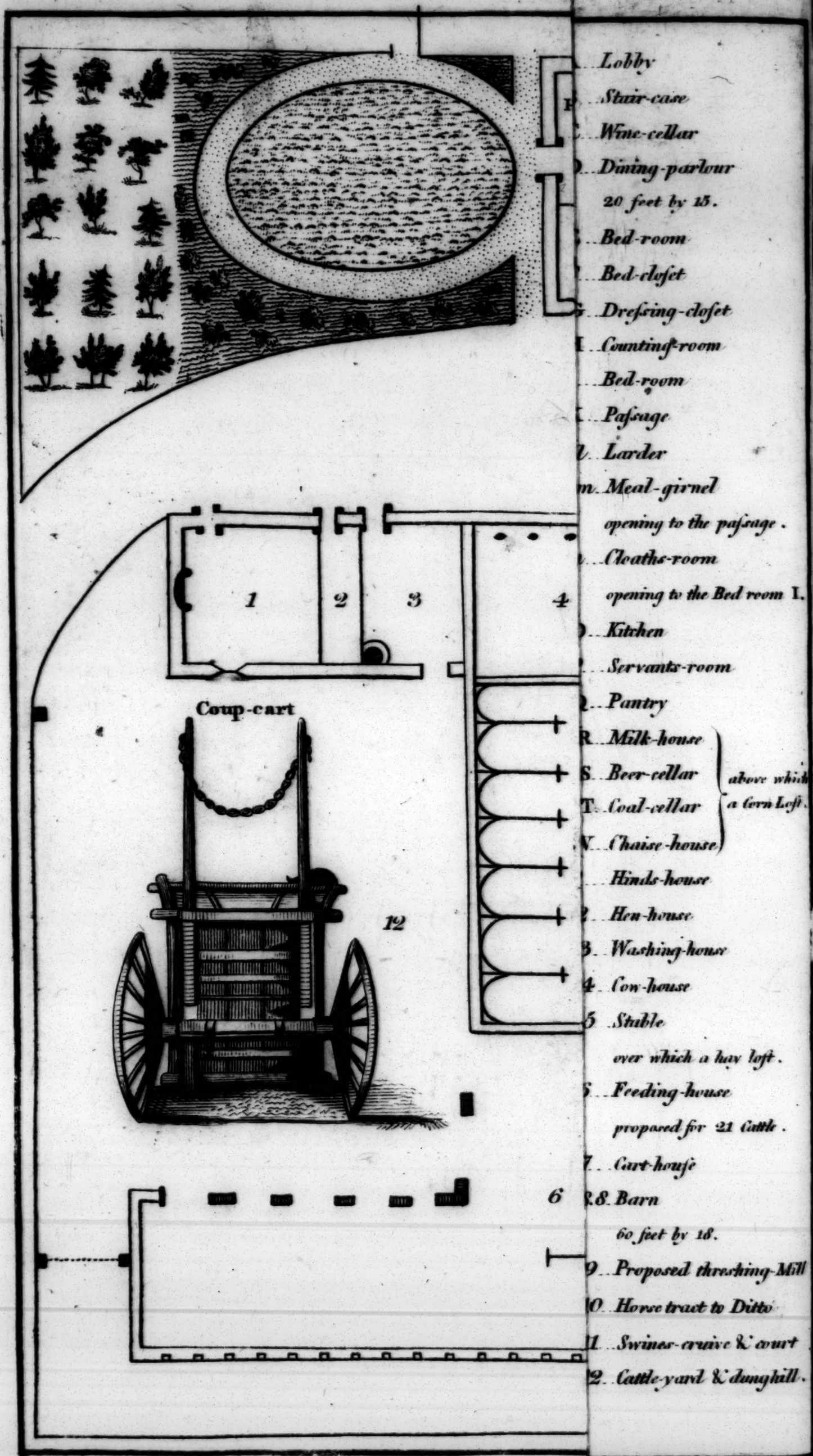
GROUND PLAN of GOGAR-BANK FARM-HOUSE &c.



- A. Lobby
- B. Stair-case
- C. Wine-cellar
- D. Dining-parlour
20 feet by 15.
- E. Bed-room
- F. Bed-closet
- G. Dressing-closet
- H. Counting-room
- I. Bed-room
- K. Passage
(L. Larder
M. Meal-girnel
opening to the passage.)
- N. Cloaths-room
opening to the Bed room I.
- O. Kitchen
- P. Servants-room
- Q. Pantry
- R. Milk-house
- S. Beer-cellar
- T. Coal-cellar
- V. Chaise-house
- 1. Hinds-house
- 2. Hen-house
- 3. Washing-house
- 4. Cow-house
- 5. Stable
over which a hay loft.
- 6. Feeding-house
proposed for 21 Cattle.
- 7. Cart-house
- 8. Barn
60 feet by 18.
- 9. Proposed threshing-Mill
- 10. Horse tract to Ditto
- 11. Swine-craive & court
- 12. Cattle-yard & dunghill.

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the house, and in others bounded by a low wall, or a set of sheds. The house is generally two stories in height; the apartments commonly 5 or 6 (besides kitchen, dairy, larder, &c.) finished in a neat style, with a proper elevation of ceiling, and disposition of light. The barns are usually 20 feet wide, the walls 8 or 10 feet high; the length in proportion to the size of the farm, holding from 50 to 100 bolls of corn in the straw at a time. They are commonly divided into two parts at least, that different kinds of grain may be threshed at once: in some instances there is a loft above the threshing place for holding corn.

In the stables the horses are put up into stalls, generally two horses together; in some stables each horse by himself, a practice not so common as it ought to be. Milch-cows also, in a few instances, are kept in separate stalls. In farms where no *winterers* † are kept, the dunghill is placed behind the stables, out of view; but otherwise, a regard to conveniency takes place of that refinement, and the straw-yard with the cattle are retained in the middle of the square as formerly, with the improvement of a free passage to the houses, defended by a wall.

The whole buildings are of substantial mason-work, roofed usually with tile, except the dwelling-house, which is commonly covered with blue slate. Some people, indeed, still retain the thatched roof, but which, being not only much dearer than tile, affording greater shelter to vermin, and more liable to fire, is generally going into disuse. The expence of erecting farm houses is regulated generally by the extent of the farm: the tenant who occupies the greatest extent of land, or pays the highest rent, is understood to require not only more extensive offices, but that his dwelling-house should be more commodious and elegant. A year's rent of the farm may be estimated to be the common allowance for building the houses; which, in the low part of the county, may amount to from 300l. to 400l.

† Lean cattle kept in winter, for the purpose of consuming the straw and making manure, and which generally increase a little in value besides.

Repairs are, in almost all cases, done by the tenant, who, getting the whole houses in a habitable condition at his entry, is taken bound to uphold them, and leave them in the like order at his removal.

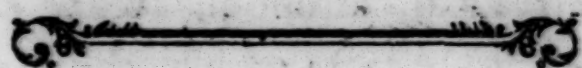
SECT. 3.—*Cottages.*

The cottages were formerly very mean; the walls (built of mud and stone) would have been unable to sustain the ponderous roof of thatch and divot, had they not been very low, and well propt up with very clumsy buttresses of unhewn stone. The inside was still more exceptionable. The *lumm*, or chimney, of a dismal aspect, erected against the end-wall, by its unaccountable width, took up a great proportion of the hut. While this was intended to give a free passage to the smoke, which it generally failed to accomplish, on the other hand it served to admit a great deal of rain. An additional light to that of the chimney, from a slit or *bole* in the wall, made up the whole architecture of the building. At present, cottages are constructed of good mason work, seven or eight feet high in the walls, and neatly thatched with straw: in some cases with a ceiling, and timber-floor; a refinement, which, in the present spirit for convenience and embellishment, is likely to become more general. The size 16 or 18 feet square, which is found sufficient to hold the furniture commodiously. They are generally built at the distance of 100 or 150 yards from the farm house, several of them together in a row. The expence of erection from about 10l. to 15l. each, and the rent 20s. or 25s.†.

† The rate of building is as follows: A rood (36 square yards) of mason-work, 25 s. and materials. Tyles, 40 s. the 1000; a rood of tyle-work 10s. and the materials. Timber (fir) 1s. 1s. 3d. and 1s. 6d. the cubic foot, according to the quality. Lime 1s. 2d. the boll in town; at the kiln, 9d.

CHAPTER IV.

MODE OF OCCUPATION.

SECT. I.—*Size of Farms,—Character of the Farmers, &c.*

Size of Farms. **T**HE farms here, with regard to extent, are not greatly different from one another. Few are much less than 100 acres, and not many amount to 300 of arable land †. They are perpetually fluctuating, and in so many instances are larger than they were half a century ago, that some people thence imagine, that the population of the country has been diminished, as if the mere change of habitation, from the villages to the towns, should occasion an extermination of the inhabitants; or, that a system of occupation, which not only admits of a greater proportion of the crop to come to market, but besides, greatly increases the product itself, should discourage the propagation of mankind.

Character of the Farmers. The Farmers in this county are in general an industrious, intelligent, and respectable body of men. The extent of their possessions has been already taken notice of, which being not greatly different one from another, admitted of little room to arrange them into classes; but as cultivators of the soil, a distinction may be observed, and a division naturally takes place. In the immediate vicinity of the town the greater part of the lands are cultivated, not by actual farmers, but what may be more properly termed Spec-

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culators

† I do not here include, under the rank of farms, those small possessions of 4 or 5 acres which are to be met with in many villages, in the hands of smiths, carpenters, or other mechanics, in which the cultivation serves only to distract the attention of the occupier from his proper profession, and to expose the wretchedness of his exertions in husbandry. A large garden, however, for raising potatoes, and every kind of vegetables, and even fruit trees, and where hives might be kept, is a useful appendage to a village cottage.

culators in agriculture, people with whom farming is but a secondary object ; their chief employment being still what was their original profession, as bakers, brewers, inn-keepers, or some other distinct occupation ; and who are oftener to be found in their town lodgings, or in their compting-houses, than in the midst of their farm, attending to the operations of husbandry. One certain effect, which the speculations of this class produce, is, that the rent of land is raised above its natural level ; for, as they have always some other business to live by, they are enabled to afford more rent, and in fact give more than an actual farmer, whose sole dependence is upon husbandry, is able to pay ; while their exertions in agriculture, tho' in general founded on good principles, commonly end in disappointment to themselves, for want of that unceasing attention which is indispensable to good cultivation, but which their other avocations prevent them from bestowing.

Another distinct order of farmers, it may be observed, consist of those, who, having been originally in a different line of business, have yet had such a strong inclination for rural occupations, that they abandon their former employment altogether, and betake themselves, wholly and without reserve, to farming of land, as a profession.. This class forms the most intelligent and most accurate of husbandmen. Like converts in religion, they have more zeal, give more application, in short, have fewer prejudices to surmount, and more enthusiasm for their new profession, than those who have been brought up in it from their infancy. They are, however, at the first outset more liable to error or mistake, from the want of practice ; but their indefatigable attention makes more than amends for their ignorance of the *minutiae* of the art ; and as they have been at some pains to acquire a knowledge in the theory of agriculture, and hence established their ideas on rational principles, they most commonly in the end make a distinguished appearance ; as their labours, if judiciously performed, tho' often in a new and experimental channel, seldom fail of being crowned with success. The number of cultivators of this description is however very limited.

Another class, of which the number in this county is considerable,

siderable, takes its rise from the lower ranks in society; of whom some individuals having, by fortunate occurrences, or more commonly by dint of great industry, acquired some small property, are ambitious of raising themselves above their former level, by ranking in the superior class of husbandmen. Of the theoretical knowledge of this order not much can be expected. Even deficient in common education, their success depends alone upon their unremitting industry and original habits of economy, but which, in their most laudable endeavours to meliorate their condition, has produced some examples of cultivation that are an honour to the country.

The most important class, however, of cultivators, are of the original stock of farmers; those who have inherited the profession from their fathers, and who have never been in any other line of life. These, in all countries, form the great body of the husbandmen; and it is chiefly from their professional character, that the state of agriculture may be judged of. In this county, about 3-4ths of the whole farmers are of this class; and whatever truth there may be in general in what speculative and spacious writers on agriculture frequently allege about the ignorance or obstinacy of common farmers, as regulating their conduct entirely from the practice of their forefathers, it does not apply at this time to them, as they do not appear to have omitted any requisite exertion to bring the knowledge of their business as fast forward, as to keep pace at least with the other arts and sciences, which in this age and nation have so rapidly advanced ‡.

Their situation, in this county, is indeed favourable to improvement. In the near neighbourhood of a great town, they may have opportunities of acquiring knowledge, which those
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‡ It is even to be doubted, if in any age or in any country, the practice of agriculture has been in blind conformity alone to the maxims of antiquity. In the most unpolished districts, there are generally good reasons for the present practice, in the present circumstances, independent of the respect due to old maxims; but these local circumstances are commonly overlooked by prejudiced or superficial observers, and hence the ill-founded and indiscriminate censure in which they indulge.

at a distance cannot. The facility, with which they may in their younger days acquire a liberal education is obvious; and they are not negligent of that advantage. They also mix, at an early period of life, in society, and hence acquire sooner the habit of transacting business with ease and with accuracy. They have likewise the advantage from being in the vicinity of the town, of reading the works of the most celebrated authors, from the many extensive libraries in circulation; and, in particular, (principally from that circumstance) the writings on agriculture are very generally known; even newspapers are had here on more easy terms than at a greater distance, and when people have a turn for such amusements, the knowledge they hence derive is considerable.

They do not, however, confine themselves merely to reading the theories of writers on husbandry, which are often speculative and visionary; but very frequently make excursions in person to the neighbouring counties, where there is any probability of seeing improvement, or of gaining information. Very few of them but have explored, at various times, one, or all of those various extensive fields of spirited husbandry, East Lothian, the Merse, and Northumberland; Stirlingshire, the Carse of Gowrie and Angus; and many of them have travelled to the more distant counties in England, in the view of obtaining more accurate intelligence of the various systems of husbandry as there practised. The valuable county reports, published by the Board of Agriculture, will greatly tend to promote such useful excursions.

The diversion of Curling*, which seems to be an entertainment peculiar to the south of Scotland, was formerly much practised by the farmers in this county. Whole parishes
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* Those who may not have heard of the nature of this game, are hereby informed in general, that it consists in heaving or pushing a stone from 40 to 60 lib. weight, with a polished bottom, on a track of ice, to a certain mark, at the distance of from 40 to 60 yards. The nearest the mark gains the game; which, though seemingly a simple operation, requires no little dexterity, as well as strength, to accomplish.

were in use to meet at one time and place to this game ; and frequently, parish against parish would contend for the victory, with all imaginable keenness. In addition to the entertainment arising from this athletick exercise, it was common for the parties to resort in the evenings to some neighbouring tavern, where they indulged pretty freely in the joys of the bowl ; and which appears indeed, to be, in some degree, necessary as a restorative, after the peculiar fatigues of the game. Owing, perhaps in some measure, to the excess in this point, to which they were liable to go into ; the game itself is now falling into disuse ; but it is chiefly owing, in the country parts, to this circumstance, that the farmers, who were the chief hands in it, having now constant employment to their servants in winter, as well as summer, have less leisure to attend to such avocations ; and, in the progress of improvement, among other alterations that have taken place on the face of the country, most of the lochs and ponds, where the curling was held, are now laid dry, so that the *amateurs* of this diversion are reduced to have recourse to the rivers only where, besides not being so accessible, the ice itself is more liable to be interrupted.

The Edinburgh races, which take place annually in the summer, though they may give entertainment to the rabble, and professed jockies, afford but little amusement to the industrious part of the community, who have not yet entered into the spirit of that species of dissipation. The farmers here, in particular, have not that relish for them that might be expected from their profession, and which indeed forms a characteristick mark of the same class of men in South Britain. They do, indeed, attend them at the rate, perhaps, of two days in six that they last ; but even this is chiefly in the view of meeting with one another, and to talk over their common affairs, or to serve them as a pretext for riding through the country, to see who has the best improved fields ; for so little do they enter into the true jockey spirit, that it may be confidently asserted, that not ten guineas, among the whole community of them, is betted during the whole course of the races in a season. The English jockey may
exclaim

exclaim against this insipidity of taste, and probably does hold it in all imaginable contempt; but let it be adverted to, that there is a progress in dissipation, as well as in improvement; and although we may be said to be partly initiated into that mode of gambling, it is not yet become the national *mania* of the country.

As an occasional occurrence of amusement serves, however, to reanimate the spirits, and to stimulate strongly to further exertion, so the Mid-Lothian farmers, though little conversant in the laws of the cock-pit or of the turf, enjoy however a fruitful source of entertainment in the pleasures of that social family intercourse which they very generally keep up among themselves. It is also from these frequent communications with one another, that many of the best improvements have been suggested, and thus, in the very hours of their relaxation, the interests of their profession are attended to; for farmers here seldom meet together, but in the view to discuss some favourite plan of operations, or to make remarks on the various systems practised in their neighbourhood.

With regard to the manner of life in the domestic situation of this body of men, it is not easy to be defined by any precise general terms. It seems, indeed, as if it were dependent, in some degree, on the state of the cultivation, of the soil, and temperature of the climate: which are not more different in the low and fertile parts of the county, from those that are high, cold, and unimproved, than are the manners and habits of life of the respective husbandmen in these different situations. The moorland farmers, as if in conformity to the soil, which has undergone very little melioration, and to the climate, which is naturally severe; seem still to retain a strong cast of the manners of their forefathers; and to live and toil under the same uncomfortable circumstances. Their houses are damp, smoaky, and diminutive: their fare simple and limited: their labours hard, and even oppressive; yet they also have their days of relaxation, and times of entertainment, and in which they shew no little eagerness to indulge. Thus, their propensity to stroll the fairs and markets is remarkable; and in their marriages, there is a display

play of festivity that is almost boundless†. Even their funerals are conducted systematically, on a pompous and ostentatious plan. But these were the customs of ancient times, and whatever is of ancient origin, is with them venerable. Even religion itself, which in other places has altered its exterior form, is still retained by them in all the austerity of the days of Oliver Cromwell and the covenant.

With all these peculiarities, they are a careful and industrious people. In the less important branches of husbandry, they are outdone by none. In the making of butter and cheese, rearing of calves, growing and dressing of lint, and such smaller matters, they are truly exemplary; though it must be observed, that these things are more properly in the female department; and, in fact, it is to the *gude wives* chiefly, that the character of industry is applicable. It is wonderful to find such a profusion of webs of sheeting, blankets, and all sorts of clothing, as they have hoarded by them; and of wearing apparel, they have such a desire to lay in a sufficient stock for their husbands, that there is hardly a man amongst them that is not provided in six or seven *stand* (suits) of cloaths at least, all home made; and, as they have not yet entered much into the dissipation of fashion, are commonly all of one cut and cast, according to the patterns left them by their great grandfathers.

In the practice of their agriculture, they are much in the same ancient stile. The division of their lands into *infield* and *outfield*, a distinction unknown in modern husbandry, is with them the principal system. The large heavy ploughs drawn with 4 horses, with the addition sometimes of 2 oxen, are still to be met with, together with the still more uncouth high crooked ridges, with intervals of unploughed land between.

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† A young farmer, although his whole fortune should not exceed L. 100 in value, will have 50 people on horseback at his wedding, accompanying him from the bride's house to his own, perhaps 10 miles distant, at full gallop. This they call *riding the bruize*, probably from the many bruises by falls, thereby occasioned.

But local circumstances regulate every thing, and when one reflects that there is here a very general continuance of inclement weather, an almost unconquerable wetness of soil, and what is perhaps worse, a great want of good roads through the different farms; it is not so much to be wondered at, that there is but a rude mode of cultivation, as that there is any cultivation at all.

One should not expect to find any degree of opulence among husbandmen of this description, but the contrary is in many instances the case. Though it is not often, that they are enabled to dispose of any considerable quantity of grain, yet as they all have a dealing in cattle, of which they breed a constant supply for the neighbouring markets, they are hence receiving, from time to time, considerable sums on that account; this, with the money arising from the butter, cheese, &c. which their wives can spare from family use, and above all, that habitual custom they have of providing themselves in all the necessaries of life from their own farms alone, enables those who are most industrious, to collect, in the course of years, no inconsiderable sums. It happens, however, more frequently, especially if the *factor* is disposed to be oppressive, that in the occurrence of unfruitful seasons, by which their corn crop is not only defective, but even the sower rendered useless, that many an industrious and frugal family among them is reduced to great straits, and even overwhelmed in bankruptcy altogether.

These particulars, in the state of the moorland farmers, are the more interesting, in that they serve, in a great measure, to describe the situation and manners of the ancient husbandmen in general over the whole country, who, before the introduction of the many great improvements that have in this age taken place in agriculture, or in circumstances connected with it, were, both in their condition and practice, in a state nearly similar to these their undegenerate posterity. Some few particulars, in the manners and habits of the present race of farmers in the low parts of the county, as may be considered to be innovations upon ancient customs, may now be taken notice of.

One remarkable circumstance, is the alteration which has taken place in personal labour. Formerly, (as still is the case in the moorlands,) the masters not only put their hand to every kind of work, but were actually the hardest wrought, and worst used labourers on their farms. It is, however, long since, in the low country, that they have emancipated themselves from this drudgery; although, at the same time, it must be acknowledged, that they have abated nothing of their former diligence and activity, but on the contrary have advanced in both. A farmer now, is constantly to be found at the head of his work; either with the ploughs, in the barn, or the cattle-yard; always overseeing some of the various operations carrying on. In this manner, his personal attention is employed to much better purpose, than when confined to a stationary employment, which, besides placing him on the same level with his servants, puts it really out of his power to direct or superintend them.

In their dress and exterior appearance, a great alteration has also taken place. Their vicinity to the metropolis, and consequent frequent intercourse with the citizens, has led them to adopt a refinement in dress, unknown to their ancestors, and which they follow up to all the variety of fashion. The same thing may be observed in regard to board, lodging, and furniture, in all of which, they have been gradually advancing to the better.

In nothing, however, is there a more striking contrast, than in this, that every article of family maintenance, which was formerly obtained at home, is now purchased in the market or in the shop. Not only the different articles of clothing but bread, beer, and butchers meat, is all had from the town. This conduct, which has the appearance of extravagance, originates in the very opposite principle; for the farm servants, now being generally married, and boarding in their own houses, the household of the master is commonly as limited in number as that of any other private individual, so that the quantity of bread, of beer, or of butchers meat, wanted from time to time, is so trifling, as to make it more economical to purchase it occasionally in town, where the bread is excellent,
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the malt liquors remarkably cheap, and the butcher market at all times well supplied.

With all these circumstances, which seem indications of wealth, they are not in the way of much increasing their fortunes. There is perhaps no profession whatever, which gives such a small return for the stock employed in trade, and the knowledge and application necessary, as does Agriculture in the vicinity of a great town, where, from the great competition for land, arising from the continual influx of noviciates from the city, who are eager to become farmers, the profits of the real husbandman are reduced to the lowest degree of recompence. Thus, while it may be observed with what rapidity fortunes have been lately here acquired, not only in the higher professions, but even in the lower mechanical arts, there is hardly an example of a farmer being able to raise himself above the level of his former station, although the husbandmen here consist of a body of men three times more numerous, and possessing a stock in trade six times greater than that of any other distinct profession whatever.

The only people among them who have a chance of bettering their condition, are those who, from the moorlands or equally inhospitable districts, may emigrate down to the more fertile parts of the county. These being inured to the practice of the most rigid economy, will, when translated to a warmer climate and more genial soil, very forcibly feel a melioration in their circumstances; and if they have fortitude enough (as the first race of them generally will) to persevere in their original habits of frugality, they may, by dint of mere saving, at the rate perhaps, of 2 1-half *per cent.* yearly on their capital, accumulate, in a life-time, a sum that may be esteemed considerable. But this thriving state will only last during the first generation. Their sons habituated in time to an easier mode of life, will, amid the general luxury with which they are surrounded, lose their primitive simplicity of manners, and with it, the faculty of saving, on which alone their prosperity depends; and hence if they are to do good at all, it will be in removing to rudely-cultivated districts, where their superior professional knowledge will give them, in their turn, the advantage

vantage greatly over the original husbandmen there, and without all question, produce effects highly conducive to the general prosperity of the country, as well as to their own particular emolument.

People employed in agriculture. Under this head are comprehended such mechanics as live in the country, whose chief employment is from farmers, or from their servants, as smiths, wrights, tailors, weavers, &c. ; and occasionally, in hay-time and harvest, as labourers.

Supposing 125 acres to be occupied, in the low country, by one farmer ; 250 in the moors, and 1000 in the hills ; and that each farmer has at an average 3 *hinds*, or married servants, and 4 domestics, the number in all will be as follows :

Families of				
In the	Farmers.	Hinds.	Mechanics.	Families on 1000 acres.
Hills -	55	165	55	5
Moorlands	220	660	220	20
Low country	400	1200	600	44
	<u>675</u>	<u>2025</u>	<u>875</u>	<u>69 on 3000</u>
Farmers families, on an average, 4 each *	-	-	-	2700
Domestics in ditto, 4 each	-	-	-	2700
Hinds families, 5 each	-	-	-	10125
Mechanics at 5 each family, hence	-	-	-	<u>4375</u>
Total of farmers, their servants, and children,				19,900
To which add, in the same proportion, the hinds and mechanics employed by the proprietors, supposing 460 families at 5 each	-	-	-	<u>2,300</u>
Total number of souls	-	-	-	22,200

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* As it often happens that several farmers are bachelors, the number of souls in each family must be less than that of other householders.

The above population is stated only at an average : in the larger farms, as the greater part of the servants is married, the population is more in proportion ; in the smaller, although the number of servants be more in proportion, yet as there are fewer of them married, the number of families and consequent population must be less.

Distribution of Crop, &c. on a Farm in the Vicinity of Edinburgh.

No. of Acres 285—Rent 636 l.

<i>Acres.</i>			<i>Acres.</i>		
In wheat	-	50	Brought forward,		260
Barley	-	35	Turnip	-	10
Beans and pease	-	35	Summer fallow	-	15
Oats	-	50			—
Hay from sown grass		50	Total	-	285
Pasture from do.	-	20			
Natural pasture	-	5	<i>Horses.</i>		
Potatoes	-	15	In the ploughs, and occa-		
		—	sionally in carts		*10
			Constantly in cart	-	2
Carry forward,	260		Threshing-mill		† 2
					Horses

* Such is the exact number of horses kept upon this farm ; but it is observed by Mr Thomas Scott, " That tho' in particular situations, and on dry land, so small a number of horses may accomplish the work upon a farm of the above extent, yet, in general over the county, there is a pair of horses kept on from every 30 to 40 acres, where they are all arable : on the whole, however, there are much about a fourth fewer horses kept now, upon the farms in general, since the two-horse-ploughs took place, than formerly. The other operations upon a farm besides ploughing, occupies so great a share of their time, that the number of horses cannot be reduced in proportion to what four horses can plough, when in two-horse-ploughs, by what they did when in one, admitting the ground to get no more work now than was given to it formerly, which is not the case.

Saving of expence is a material object in carrying on every manufacture ; but the saving of horses, under what is sufficient to work a farm to good purpose, and in proper seasons, never fails to turn out greatly to the loss of those who have attempted it." T. S.

† In the former impression, this was stated to be but *one*. Since that time another has been added, but they are both upwards of 25 years old, and of a small size.

OF MID-LOTHIAN. 55

Horse for riding	-	1	Families on the farm	16
Colts	-	4	Of which wholly maintain-	
<i>Cattle, &c.</i>			ed	12
Milch-cows	-	4	Souls in ditto	59
Bull	-	1	Families partly maintain-	
N. B. Some cattle also			ed	4
bought in occasionally as			Souls in ditto	11
the pasture may require.			Total number of souls	70

This farm, 50 years since, was occupied by three farmers, who kept 11 horses each, and two cottagers, making only 9 families in all.

Distribution of Crop, &c. on a Farm in the Moorlands, 12 miles from Edinburgh.

No. of Acres about 200—Rent 60 l.

	<i>Acres.</i>	<i>Live stock.</i>	
Of which in oats	- 50	Horses	- 11
Bear	- 9	Milch-cows	- 9
Pease	- 6	Draught oxen	- 2
Meadow-hay, natural	15	Bull	- 1
Pasture about	- 120	Young cattle	- 20
	—	Calves	- 5
Total	- 200	Sheep	- 78

The above two instances are stated, not as rules in husbandry, but merely as *facts*, consistent with my own knowledge; the first being that of the farm of Granton, which I rent myself; the second was rented by one of my relations.

S E C T. 2.—*Rent.*

The rent of nursery and garden ground, in the vicinity of Edinburgh, is from 4l. to 10l. the acre. There are many hundred acres thus occupied, of which the rent, at an average, may be 6l. Even lands employed in husbandry, adjacent to the town, are in some instances as high as 5l. 4l. is frequent,

frequent, and 3l. 10s. very common. It is computed, that the lands for four miles around Edinburgh, in which is included much poor soil, are let, at an average, at two guineas and a half the acre. Even at the distance of eight or ten miles from town, there is much land let at 40s. and even some at 50s. or more. Farther up the country, the rent is indeed much lower: in the moorlands it often does not exceed 1s. and 3d. the acre; but even there, land of a good quality lets as high as eight or ten shillings, notwithstanding of the general coldness of the climate in these situations.

The whole land-rent of the county may be found in the Statistical Table, to which the reader is referred.

SECT. 3.—*Tythes.*

Tythes are unknown in this county: a circumstance, with which the proprietors in particular have reason to be satisfied; as it is one of the many causes of rents being high, and the profits of farming low; from the greater competition incited by the removal of this obvious obstacle to the complete cultivation of land, at least to any expensive improvements.

SECT. 4.—*Poor Rates.*

Poor rates, a more serious evil, are however beginning to extend their pernicious influence; a just retribution for the unwise conduct, and contracted disposition of the generality of the opulent; who, deserting the churches, have also withheld their contributions for the poor*, which were wont to be

* In a recent case, when wheat was at L.7 the quarter, it was proposed, in a certain parish in this county, to lay on an assessment, equal to about 2d. in the pound rent, to be paid by proprietors and tenants in equal proportion, in order to buy meal, to sell again to the poor at a reduced price; the factor on one of the principal estates refused to concur, on this unfeeling principle, *That there was no necessity for the application.* It being but an uphill kind of business at the best, the assessment did not take place. How will our rate-ridden neighbours judge of our conduct?

be more bountiful ; and as it was distributed to the indigent in the form of an alms, it had the effect of suppressing improper applications for relief on the part of the poor themselves, ashamed even to expect it ; but now, wherever rates are established, they are taught to receive it with assurance, from its being a legal assessment, of which they think themselves intitled to partake.

There are, however, but few parishes in this county, where this mode of relieving the indigent has taken place, and even in these, the rate is very moderate ; as the relief afforded to the poor seldom exceeds 1s. each, in the week, and is in most cases less. In by far the greater part of the county, the poor are still supported from the money arising from voluntary contribution at the church doors, under the management of the Kirk Sessions of each respective parish, which have hitherto continued to make these very limited funds answer the purpose of the institution, confining the application to the most necessitous alone. Indeed the peasantry of this country, unless where contaminated by the introduction of poor-rates, retain still more of a virtuous and independent principle, than to apply for support, but in the most urgent cases. *For further particulars see the Statistical Table.*

SECT. 5.—Leases.

The most common length of time is nineteen years, which, in a cultivated country, seems to be a very reasonable period for all parties, but was formerly twice, and sometimes thrice that extent. There are, however, many deviations from this rule. When lands have been long in pasture, and are again brought into tillage, in order to eradicate the fog, and renew the pasture-grasses, or perhaps for the sake of a better rent, it is common to let them for three, five, or seven years only, restricting the tenant to certain crops, and obliging him to lay the grounds down again into grass. Or, where there are circumstances which call for a more than usual exertion, as improving of waste grounds, draining of wet land, inclosing, &c. the tenant gets a lease for a longer period, ac-

H

cording

ording as these may require ; and in that case, 21, 25, or 31 years, is the general term of endurance. In some of the moorland parts of the county, the tenants still remain without any lease whatever ; but this is not owing so much to their landlords, who are willing enough to grant it, as to themselves, who have an aversion at being bound by such an express engagement ; rather preferring the greater freedom that results to them, from a paction which endures only for a single year.

The term of entry to an arable farm is at Michaelmas, or the separation of the preceding crop from the ground. Grass grounds are entered to at Candlemas in the low part of the county, and at Whitsunday in the moorlands. The payment of rents for arable lands is generally made at three different terms, Candlemas, Whitsunday, and Lammas, in equal proportions, for the preceding crop. In some cases rents are payable per advance, for the crop succeeding ; that for pasture is generally paid at Martinmas, or new-year's day at farthest ; it being understood that the grazier has had time to draw in the produce of his stock before these periods. Formerly it was the custom to pay the whole rent in *kind* ; but this often occasioning disputes between the parties, in all leases lately granted, the rent is altogether payable in money ; some few instances excepted, in which a small number of services is still retained.

The Covenants in leases, or prestations, as they are here called, are commonly as follows : The houses, which are delivered over in an habitable condition to the tenant at his entry, he is bound to keep in proper order, and to leave in an habitable condition at his removal. Even houses, which he may erect during the lease, must be left in good order at the end. Formerly the landlord furnished the *great timbers* needed for repairs, but that article is now generally left out. Coal and other minerals are reserved, and a right to work them, upon paying the surface damages. If there be growing timber on the land, the tenant is bound to preserve it. Where the lands are inclosed, in some instances the whole charge of the fences, and expence of reparation, is laid on the tenant, who

who in this case is very apt to neglect them; in others, the whole expence is laid on the proprietor, which is necessarily productive of dispute and litigation *. This business should be a joint affair between landlord and tenant. The former should retain the sole direction, and the latter pay one half of the expence; in which case neither of the parties would be inclined to give unnecessary trouble to the other, and the fences would be properly preserved, which is the chief object of the stipulation. The tenant is generally bound to reside on the lands; this is impracticable, however, in the event of his occupying more farms than one: but the landlord in this case is compensated, for the supposed loss from his non-residence, by the additional rent which is commonly given for a *led farm*, as it is called. It is usual to debar the tenant from subsetting, although he cannot thereby relieve himself from being still liable for the rent, and the other prestations. In practice, however, this is frequently evaded; but often the landlord, although not obliged, gives permission to subset. The whole straw on the farm (called *steelbow*, a term of uncertain etymology) was in use to be left on the lands the last year of the lease, for the benefit of the incoming tenant, free of all charges, (but this stipulation is now generally abolished;) also the whole manure; a condition that still exists, even without an express clause, it being always understood that the manure must be paid for. It is also common to stipulate respecting the state in which the lands ought to be left at the end of the lease; that a certain quantity must be in pasture, green crop, &c. With regard to the order in which grass grounds should be left, disputes are very apt to arise. They act wisely in this case, who oblige the tenant to have at least one crop off them himself, as his own interest will induce him to do justice to the land, both with respect to seed and to labour.

H 2

S E C T.

* In a case where the landlord was bound to pay the whole expence of reparation of fences, a tenant has been known to eat down the grass of one inclosure so much with cattle, that, desperate with hunger, they broke continually out into the adjoining closes belonging to himself, who then pointed his own cattle, and sued his landlord for damages.

SECT. 6.

Expence and profit, &c. to which is prefixed an estimate of the capital required to stock a farm in the vicinity of Edinburgh.

Though a farm here is commonly entered to, at the term of Michaelmas, or separation of the preceding crop from the ground, yet, the *incoming* tenant has, in general, an interference with the lands for some months before. Thus, as it is necessary, that part of the farm should be sown with grafs seeds, he has this to do in the preceding spring, with the consent however of the *outgoing* tenant, who is usually paid for any supposed damage that may thereby arise to his own crop. As it is probable that some of the fields on the farm may be in bad order, it becomes, perhaps indispensable, that they be summer-fallowed; this must be done with the consent of the outgoing tenant also, and who must be paid, not merely the rent, but such a sum in addition as may compensate him for the want of the crop likewise. Dung must also be purchased, and carried to the lands in the course of the summer, for the ensuing crop of wheat, which cannot be acquired without manure; some servants of course must be hired, horses purchased, and provender provided by the term of Whitsunday, to carry into effect these different purposes; till at last, by the term of Michaelmas, the farmer himself, with his whole family and stock, gets entire possession. As it will be Whitsunday at the soonest in the succeeding year, before any support for the farm-cattle can arise from the lands, and the first of September thereafter, till there can be any thing sold to defray any other incumbent expences, therefore, all the money that it becomes necessary to disburse from the commencement of the tenant's connexion with the farm, till the latter period, must be considered as *capital* for the stocking of the lands, and which forms the subject of the following calculation on a farm, supposed to be lately entered to, consisting of 190 Scotch acres, all in cultivation, at the rent of 50 s. *per* acre, lying within about three miles from town.

I. LIVE

I. LIVE STOCK.

	<i>L.</i>	<i>s.</i>	<i>d.</i>
6 Horses, bought at Whitsunday, at L. 20 each	120	0	0
4 Ditto, October 1st, - - ditto	80	0	0
1 Riding horse, ditto - - ditto	20	0	0
2 Milch-cows ditto at L. 8 each - -	16	0	0
10 <i>per. cent.</i> on the above to keep up the stock	23	12	0
Hogs and Poultry - - - - -	5	0	0
The live stock costs -	L. 264	12	0

II. IMPLEMENTS.

	<i>L.</i>	<i>s.</i>	<i>d.</i>
4 Ploughs with mounting, - - -	10	0	0
4 Pair of Harrows, ditto - - -	5	0	0
1 Brake, - ditto - - -	1	10	0
1 Roller, of stone, mounted, - - -	2	5	0
Drilling and horse-hoeing machinery, -	3	3	0
6 Dung carts, part double and part for single horse,	54	0	0
2 Corn carts, and } for carrying hay, &c.	4	10	0
4 Sets of wings, }			
Wheel-barrow, dung and corn forks, shovels, spades, rakes, hoes, ladders, &c. - - -	6	0	0
4 Sett of double cart harness, - - -	10	10	0
2 Sett single ditto - - -	3	3	0
Stable furniture, as racks, mangers, &c. - -	6	6	0
Barn implements, as fanners, sieves, &c. -	6	6	0
2 dozen of corn bags, - - -	3	0	0
	L. 115	13	0
10 per cent. on the above, the first year, for tear and wear, - - -	11	11	3 $\frac{1}{2}$
Implements thus cost *, -	L. 127	4	3 $\frac{1}{2}$

III. SEEDS.

* If there had been a threshing mill, the expence on this article would have been at least L. 30 more.

III. SEEDS.

	<i>L.</i>	<i>s.</i>	<i>d.</i>
20 acres hay or pasture, sown in April or May pre- ceding, at 20 s. per acre, - - -	20	0	0
40 acres wheat; 40 bolls, at 22 s. 6 d. per boll,	45	0	0
32 acres barley; 28 bolls, at 20 s. per boll, -	28	0	0
40 acres oats; 45 bolls, at 16 s. per boll,	36	0	0
32 acres beans; 48 bolls, at 16 s. ditto, -	38	8	0
6 acres turnip; feed will cost only - -	0	7	0
10 acres potatoes at 25 s. per acre, - -	12	10	0
10 acres fallow, - - - - -	0	0	0
190; of which 32 acres sown with grass seeds for the next year, - - - - -	32	0	0
Seeds will thus cost -	L. 212	5	0

IV. MANURE.

	<i>L.</i>	<i>s.</i>	<i>d.</i>
1200 cart load, bought in Edinburgh, or in the vi- cinity, at 1 s. 6 d. the cart load, prime cost,	L. 90	0	0

V. LABOUR.

	<i>L.</i>	<i>s.</i>	<i>d.</i>
3 men servants from the 26th of May in one year, till the 1st of September in the next year, at 6 s. 6 d. weekly, each, - - -	64	7	0
2 ditto, from October 1st, till September 1st fol- lowing, at ditto, - - - - -	30	17	6
1 boy, from October 1st to September 1st next, at 4 s. 6 d. weekly, - - - - -	10	13	9
Extralaour, in wheat seed time, filling and spread- ing dung, &c. - - - - -	3	0	0
Ditto, in spring time, ditto, and collecting weeds, stones, &c. - - - - -	3	0	0
Ditto, hoeing and weeding in summer, -	3	0	0
Ditto, hay-making, - - - - -	5	0	0
Amount of labour, -	L. 119	18	3

VI. MAIN-

VI. MAINTENANCE of HORSES.

L. s. d.

6 Horses from May 26th in one year till the same
time next year, at 9 s. weekly, each, hence 140 8 0

5 Horses from October 1st to May 26th following,
ditto, - - - - - 76 10 0

Shoeing ditto, at 1 s. each, monthly, - - - 6 10 0

In all, L. 223 8 0

N. B. There is nothing charged for the maintenance of the
milch cows, hogs, and poultry, it being supposed that the
profit arising from these is equal to the expence of keeping.

VII. FAMILY EXPENCE*.

L. s. d.

2 Servant maids, from October 1st, to September
1st following, at 4s. 6d. each, weekly, wages
and board, - - - - - 21 7 6

The board of the farmer himself, his wife, and
say 2 children, at 2s. 6d. daily, for 11 months, 41 11 3

Cloaths to ditto during that time, - - - 20 0 0

Coals, 12s. monthly, prime cost, - - - 6 12 0

Soap, candles, starch, &c. - - - 5 0 0

Tear and wear of furniture †, - - - 5 0 0

Total for the family, L. 99 10 9

VIII. INCIDENTS.

L. s. d.

Paying the former tenant for permission to sow
grass seeds on 20 acres, at 5s. per acre, - 5 0 0

Brought

* It may perhaps be said, that this ought not to be accounted as capital,
but as the farmer's own family will require to be maintained during the time
he is stocking a farm, as well as after he has reaped the crop, he must
have funds to answer this demand, as much as of any other.

† Furniture itself, not accounted, but may be stated as worth L. 200.

	Brought over, L.	5	0	0
Paying him also for 10 acres taken from him for summer-fallow, rent and supposed profit,		40	0	0
Road-money, turnpikes, taxes, &c.		8	0	0
	Total L.	53	0	0

RECAPITULATION.

	L.	s.	d.
I. Live Stock,	264	12	0
II. Implements,	127	4	3 $\frac{1}{2}$
III. Seeds,	212	5	0
IV. Manure,	90	0	0
V. Labour,	119	18	3
VI. Maintenance of Horses,	223	8	0
VII. Family Expence,	99	10	9
VIII. Incidents,	53	0	0
Total capital,	L.1189	18	3 $\frac{1}{2}$

Which is at the rate of 6l. 5 s. 3 d. *per acre*. Including 200 l. for household furniture, it would be 7l. 6 s. 2 d. but without either that or family expence it amounts to 5l. 14 s. 9 d.

EXPENCE and PROFIT.

As it appears to be an object with THE BOARD, to have an estimate of the *expence* and *profit* attending a farm, I shall here endeavour to give a general view of both, on such a farm as above, which, without pretending to precise accuracy on any one point, may, on the whole, be held to be tolerably correct; and as there are peculiar circumstances affecting both the first and last years of a lease, the calculation is taken on an intermediate year, supposing the crop to consist of as follows :

Acres.	Produce <i>per Acre</i> .	Gross amount.
44 of wheat,	L. 9 0 0	L. 396 0 0
32 barley,	6 10 0	208 0 0
76 acres.	Carry over,	L. 604 0 0

Acre.	Prod. per Acre.	Gross Amount.
76 Brought forward.	- Brought forward,	L. 604 0 0
32 of oats	- L. 8 0 0	- 256 0 0
32 beans and pease,	7 10 0	- 240 0 0
26 hay,	6 0 0	- 156 0 0
6 potatoes,	7 10 0*	- 45 0 0
6 turnip,	7 10 0*	- 45 0 0
6 pasture,	- 2 10 0	- 15 0 0
6 fallow,	0 0 0	- 0 0 0
190		Total, L. 1361 0 0

Which is at the rate of 7l. 3 s. 3 d. one acre with another at an average of years, which I apprehend will be esteemed a sufficiently high calculation. I shall now endeavour to estimate how it is disposed of, in order to find out the profit of the farmer, that it may be seen whether the laird has justice done him in the transaction.

RENT,

At 50 s. per acre, hence L. 475 0 0

LIVE STOCK.

Ten per cent. on ditto, annually, to keep it up, L. 23 12 0

IMPLEMENTS.

Tear and wear of ditto, 1-3d of the original purchase yearly, L. 38 11 0

SEEDS,

According to the proportion and price, in the account of the capital, L. 183 15 0

I

MANURE,

* Supposed to be sold on the ground.

MANURE.

Prime cost of what is bought yearly, being 1-3d less than the 1st year, because a considerable proportion more will now be made at home, L. 60 0 0

LABOUR.

	L.	s.	d.
Five men and a boy, board and wages for a year, the men at 6s. 6d. weekly, the boy at 4s. 6d. hence, in all	96	4	0
Extra, in the spring feed time,	10	0	0
Ditto, hoeing, &c. in summer,	10	0	0
Ditto, hay-making,	6	10	0
Ditto, in harvest,	40	0	0
Ditto, in wheat seed time,	5	0	0
Ditto in winter, threshing the crop, &c.	35	0	0

Amount of labour, L. 202 14 0

MAINTENANCE of HORSES.

	L.	s.	d.
Eleven horses one year, at 9s. weekly each, hence	257	8	0
Shoeing ditto, 12s. each <i>per annum</i> ,	6	12	0
In all,	<u>264</u>	<u>0</u>	<u>0</u>

INCIDENTS.

(These calculated at 1-half of my own, at an average of years.)

	L.	s.	d.
Turnpikes, market-charges, mags (ale-money) to servants,	13	2	3
Taxes, road-money and insurance,	5	14	1
Bad debts and law expences,	8	5	6
Reparation of buildings,	5	0	0
These amount to	<u>L. 32</u>	<u>1</u>	<u>10</u>

RECAP-

RECAPITULATION.]

	L.	s.	d.
Rent, - - - - -	475	0	0
Live stock, renewal of, - - - - -	23	12	0
Implements, tear and wear of, - - - - -	37	10	0
Seeds, - - - - -	183	15	0
Manure, - - - - -	60	0	0
Labour, - - - - -	202	14	0
Maintenance of horses, - - - - -	264	0	0
Incidents, - - - - -	32	1	10
Total, L.	1278	12	10

Dividing the whole produce into 100 parts,

59 of these go for labour, &c.

35 as rent,

6 as farmer's profit,

100

Total produce, - L. 1361 0 0

Total rent and expence, 1278 12 10

Farmer's profit, - L. 82 7 2

Deduct interest of the capital, 59 9 10¹/₂

Remains, L. 22 17 3¹/₂

which is all that the husbandman has in recompence for his professional knowledge, personal labour, and unceasing attention *.

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That

* The commonly received notion, that the produce of a farm should be divided into three equal parts, one for the rent, another for the seed and labour, and a third for the farmer's profit, is not well founded, at least in this instance. Indeed, I believe it to be hardly correct in any example whatever: that it obtains credit, can be imputed only to this, that people often allow themselves to be misled, from mere want of investigation.

That there are many farms in this county in which the profit is greater than in the above example, is not to be denied. In fact, there are several in which it is even double that proportion. On the other hand, it is indisputable, that the reward of agriculture is frequently less. The many examples, that are yearly occurring, of sequestrations among the farmers in Mid-Lothian, are too strongly probative of this fact to be disguised; and these, in instances where neither professional knowledge, nor personal attention, are deficient.

It has already been taken notice of, that the competition for farms in the vicinity of Edinburgh is so great, as to reduce the profits of the husbandman to little more than legal interest on his capital; of course, a farmer so circumstanced, must be very liable to failure upon any disastrous occurrence, particularly, as in many cases that happen, when the laird, or factor, with unrelenting disposition, exacts rigorously the rent at the precise term of payment, giving no more indulgence to the tenant on a *racked* rent, than to others who enjoy their farms on more favourable conditions. Two very unfavourable circumstances to the tenant arise from this harshness of conduct: *first*, He is under the continual necessity of forcing his crop at all times to market, whether it can be done to advantage or not, and thus often obliged to sell it at an under value, for ready cash, to people, who, knowing his situation, take advantage of his necessities: *second*, (which is perhaps worse,) He dares not lay out money upon the improvement or melioration of his farm, (which is always a distant, and often an uncertain speculation, but which is nevertheless essential to the well-doing of the farmer,) because he has no certainty, that the money so applied may not be required before he can recover it, to satisfy the demands of his rigorous landlord. I have frequently had occasion to observe the circumstances attending failure among farmers, and have often seen it imputable to the above rigorous, and at the same time injudicious, conduct on the part of the proprietors.

Capital employed in Agriculture. This, in the former impression of this report (page 23.) was stated at L. 5 the Scotch acre,

acre, in the low country ; L. 2 in the moorlands, and 5 s. on the hills, and was considered by some of the most intelligent farmers as a very proper calculation at the time. Two circumstances, however, on which this in a great degree depends, have had an effect, even in the short time that has intervened, to render this computation too low : the one is, the higher rate, at which every article required for the stocking of a farm is now valued, independent of its intrinsic worth ; and the other, the intrinsic value itself is augmented, from the general taste that more and more prevails, of having every thing of a superior quality to what people were formerly satisfied with. From both these causes in conjunction, the capital must now be stated as being about 1-4th part more than it was at the former period, only two years ago. The estimate already given of the capital on a single farm in the vicinity of Edinburgh, being 6 l. 5 s. 3 d. the Scotch acre, corresponds pretty nearly with this idea, and as to that calculation, it is hazarded in the full conviction, not only of its being moderate, but that in every point wherein it is extravagant, I will not only deserve, but will meet with censure ; of course, I may be considered as having guarded as much as possible against that imputation.

On these data, the whole capital employed in agriculture, in Mid-Lothian, may be stated as under :

	Scotch acres.	Per acre.	Amount.
In the low country,	60,000	- at L. 6 5 0	- L. 375,000
moorlands,	60,000	- at 2 10 0	- 150,000
hills,	60,000	at 0 6 3	18,750
Total acres,	180,000	average L. 3 0 5	sum L. 543,750

N. B. The first calculation for Scotch acres will answer to English acres of the present.

CHAPTER V.



IMPLEMENTS.

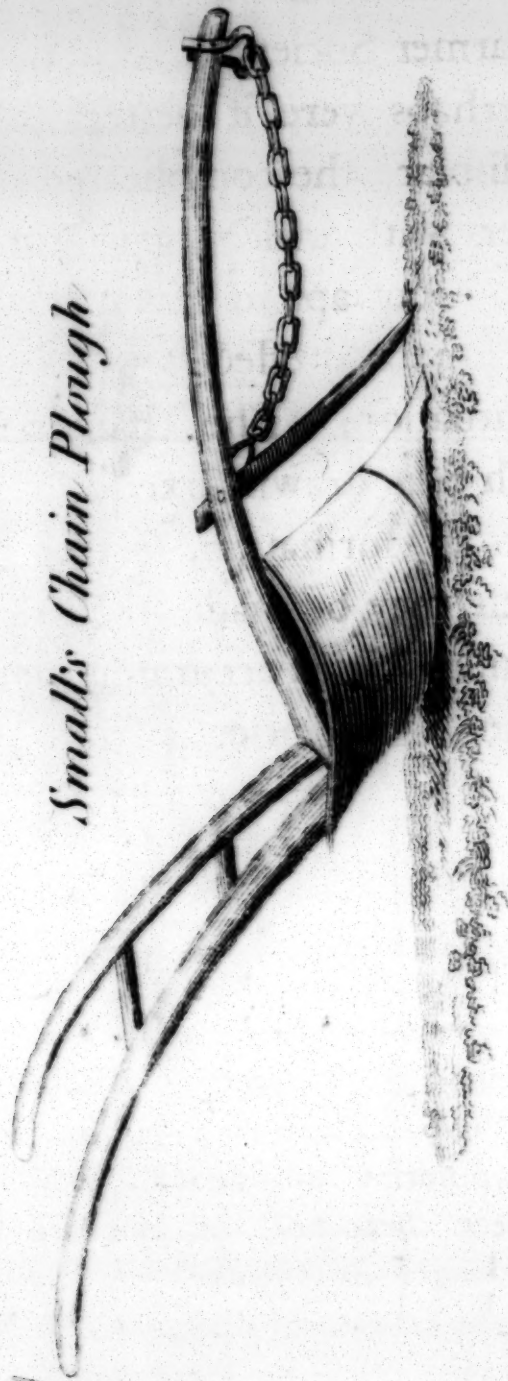
NOT many years since, these were few in number, and rudely constructed. They have undergone much alteration of late, and several instruments of labour have been added to the former list.

The *Plough* formerly used was the *Scotch* (see the plate,) long and heavy, yet well adapted to the powerful draught of 4 or 6 horses, that were frequently applied. When it was perceived that 2 horses were sufficient for every purpose of tillage, this simple implement was constructed on a lesser scale, but the original proportions still retained. It has since been improved in principle, (made somewhat resemblant to the *Rotherham Plough*) by the late Mr Small at Ford, in this county, who has, on true mechanical principles, modified the mould-board into such a form of curvature, as to make less resistance to the earth as it is turned up, by which it requires less force to draw it, than any other plough known in this country; while the furrow itself is gradually laid over to its proper position*.

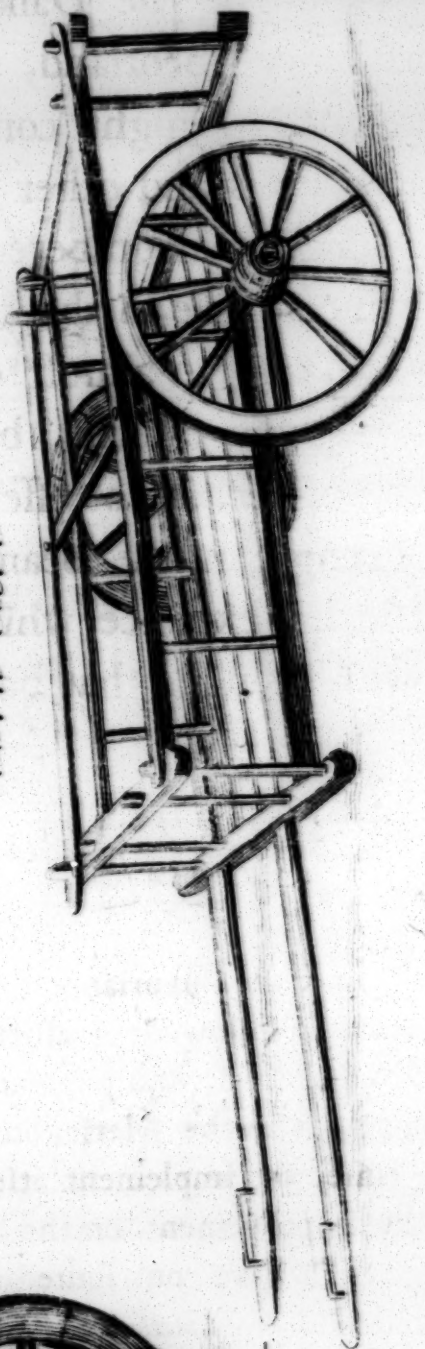
The

* From the admirable Statistical Account of the Parish of Inveresk, by Dr Carlyle, the following is copied :

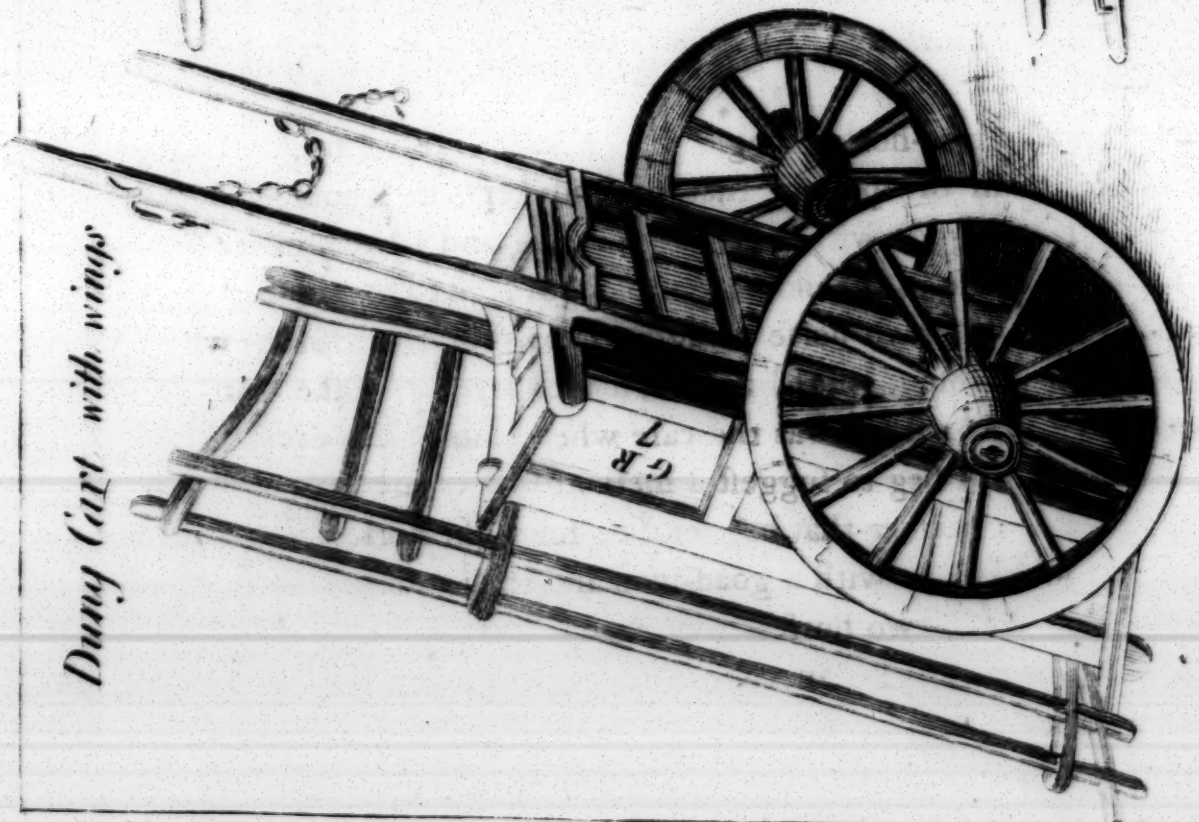
“The writer of this account, and DR GRIEVE then minister of Dalkeith, having each of them entered into the possession of small farms in the higher parts of their respective parishes, in the year 1768, being acquainted with the practice of the ancients in that particular, and having observed the wheel plough with two horses, held and driven by one man, successfully used for some years within the park of Dalkeith, resolved to make a trial of that method in their farms, though of a strong clay soil. They began with horses, and in a short time trained oxen likewise to the same operation. They were laughed at in the beginning, by the neighbouring farmers; but when the second year came round



Small's Chain Plough



Corn-Cart



Dung Cart with wings

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The mouldboard, as well as the *sheath*, is now generally made of cast-iron, on the inside of which is an inscription, bearing, Mr Small's name, the name of the founders, (Cooper and Barker) and, what is principally intended,—the approbation of the Dalkeith Farmer Society. It is now universal over Scotland, and perhaps were it better known in England, it might come to displace the complicated ploughs with wheels and other trumpery with which agriculture there is at present incumbered; as it is not apt to be put out of order, but simple in the construction, and effective in operation, it is adapted to almost every situation. The chain, connected with the muzzle, by which it is drawn, fixed as far back as the culter, is not essential to its formation, serving merely to strengthen the beam, which may be made stronger of itself at less expence, while the tillage is as accurately performed with ploughs that have none. The price is from 40 s. to 50 s.*

The

round, and the luxuriance of their crops was observed, their example was immediately followed by all their neighbours. The practice spread itself gradually all around, and for many years there has been no ploughing in all the Lothians, or in the Merse, but with two horses and one man; while, at the same time, the implement itself has been cheapened and amended by Mr Small's improvement on the Scotch Plough. It is obvious, how much this change must have contributed to lessen the expence of tillage, and to raise the rent of land."—*Statistical Account of Scotland* by Sir JOHN SINCLAIR, Vol. XVI. page 12.

* Mr Small's two-horse ploughs are a very great improvement in husbandry, but I am of opinion, that ground kept in labour, should once in three years be ploughed with a larger plough; and I have never seen one so good for the purpose as the old Scotch plough. Here it will not be improper to observe, that the two-horse ploughs, is part of the reasons why ploughmen's wages have rose so high, and must increase; as by the want of drivers no ploughmen are bred, as was the case when young lads drove the ploughs.

To remedy this, I beg to suggest a method to increase the number of these useful men: every farmer that has occasion for eight horses for labour, to have only six and four oxen; with a goad-man and the Scotch plough, the expence would not exceed the two horses, considering the difference of maintenance, and that there never can be any loss of them; horses, after six years old, lose in their value, at least one pound *per annum*; and after twelve, double that sum; oxen always rise in their value, till it is thought proper to feed them off.

Single

The *Harrow*, of which there are several kinds, is commonly made of four *bulls*, connected by four *slots*, generally four feet square, weighing about 48 lbs. averdupois, besides having 20 iron *tynes* or teeth, of about 1 lb. wt. each. Each harrow is always drawn by one horse; three of which are frequently yoked together under one driver. This implement may be improved in principle by altering the arrangement of the tynes. Thus, in the common harrow, (see the plate,) which is always drawn in the direction of the line A A, the 20 tynes make only 11 different ruts, as several follow one another in the same tract, and even those are not all effective, for two on each extreme corner (a a, a a,) are so unconnected with the others, as not to be accounted in the work, seven ruts only (see the dotted lines,) being found properly done; from this it happens, that one harrow drawn by itself, covers only three feet of ground, two covers but about six, and three, which does however more in proportion, covers only ten; whereas, in the improved harrow, (see the plate,) although it has only 16 tynes, yet as each tyne makes a separate rut, (in the direction of the dotted lines,) one harrow drawn by itself will cover 4 1-half feet, two harrows will cover about eight feet, and three covers 12 feet, at the same time the ruts are only three inches 8-10ths asunder, but in the common harrow, they are six inches distant. A pair of harrows cost about a guinea*.

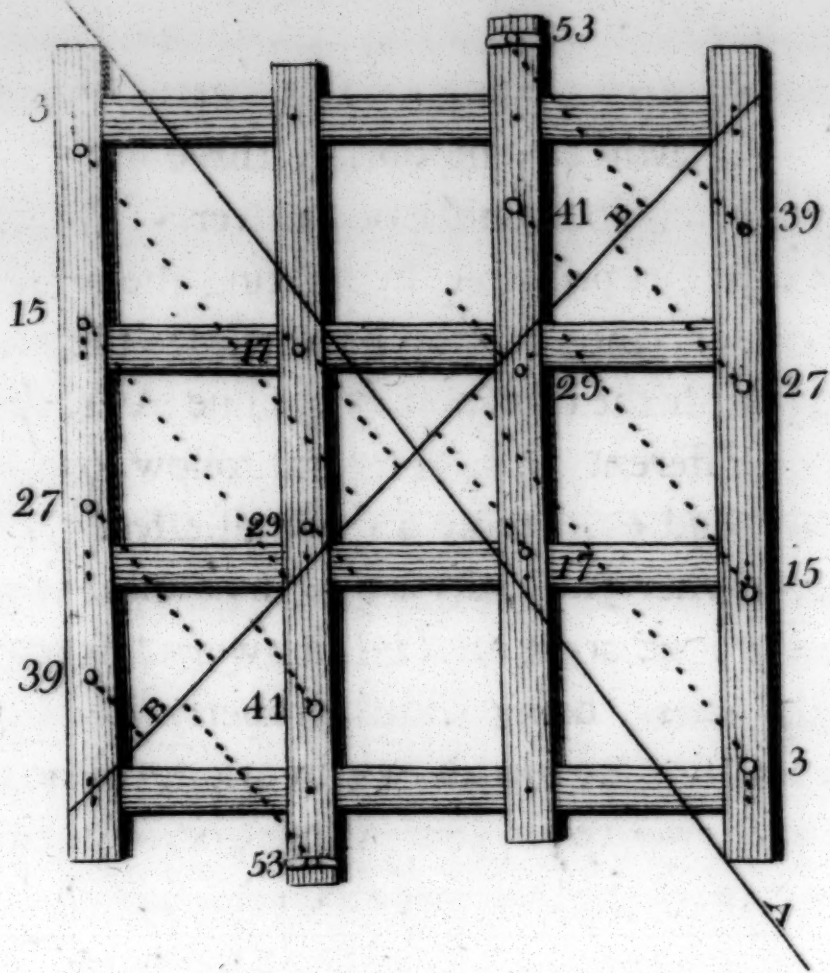
Rollers

Single-horse carts, with one man driving two, four miles from Edinburgh, would amply supply the want of two horses; oxen could be usefully employed at home driving dung, &c.

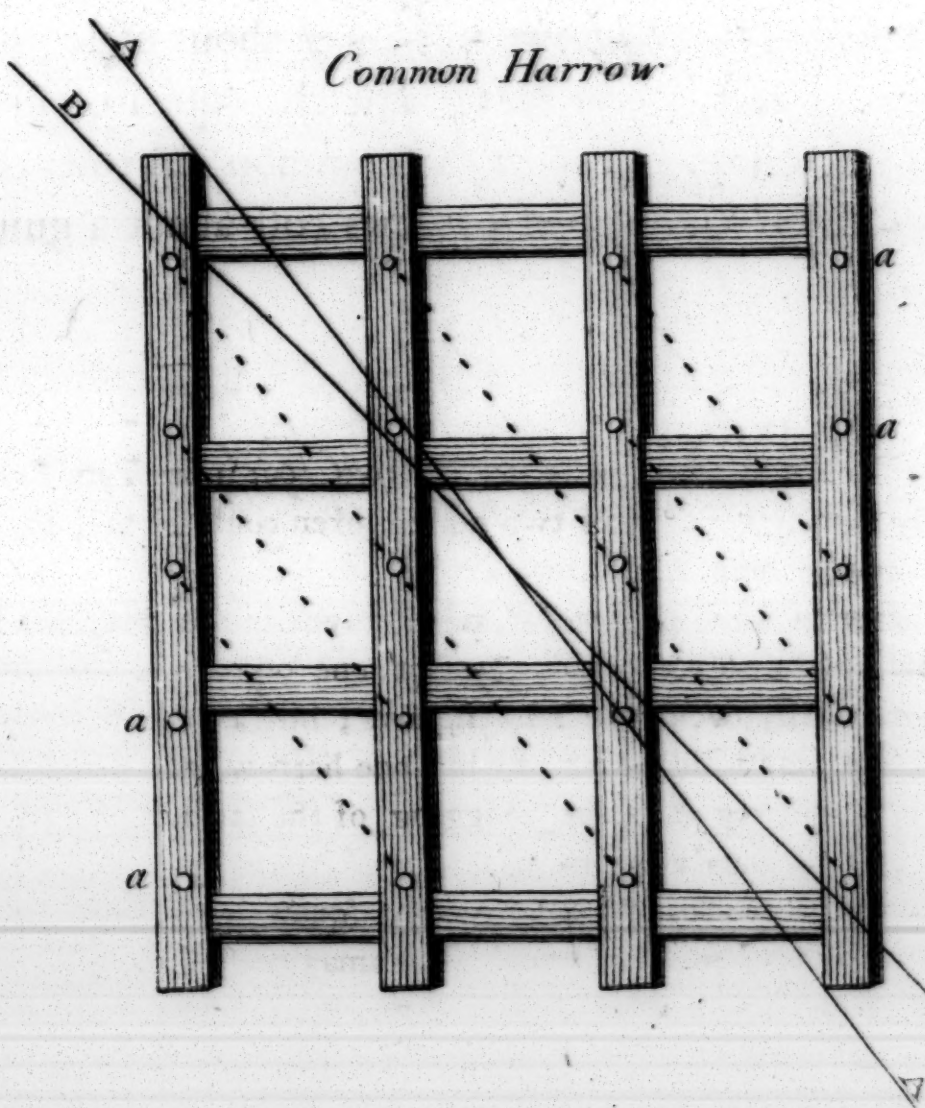
* If the common harrow, however, were drawn in the direction B B, the 20 tynes would make 16 ruts; still, however, one on each side, at two opposite corners diagonally, would be non-effective; but after all, this direction of draught is not practicable, with any but one harrow at a time, for if two or more were yoked together, the dragging of the farthest off would interfere with that immediately before it.

In the improved harrow, the dimension is a square of four feet, exclusive of the projection of the bulls at the ends. The imaginary line, A A, shows the direction of the draught; B B is also an imaginary line, serving merely, in the plate, to point out the regular distance of the ruts; the figures at each tyne show the distance in inches at which they should be inserted from the ends

Improved Harrow

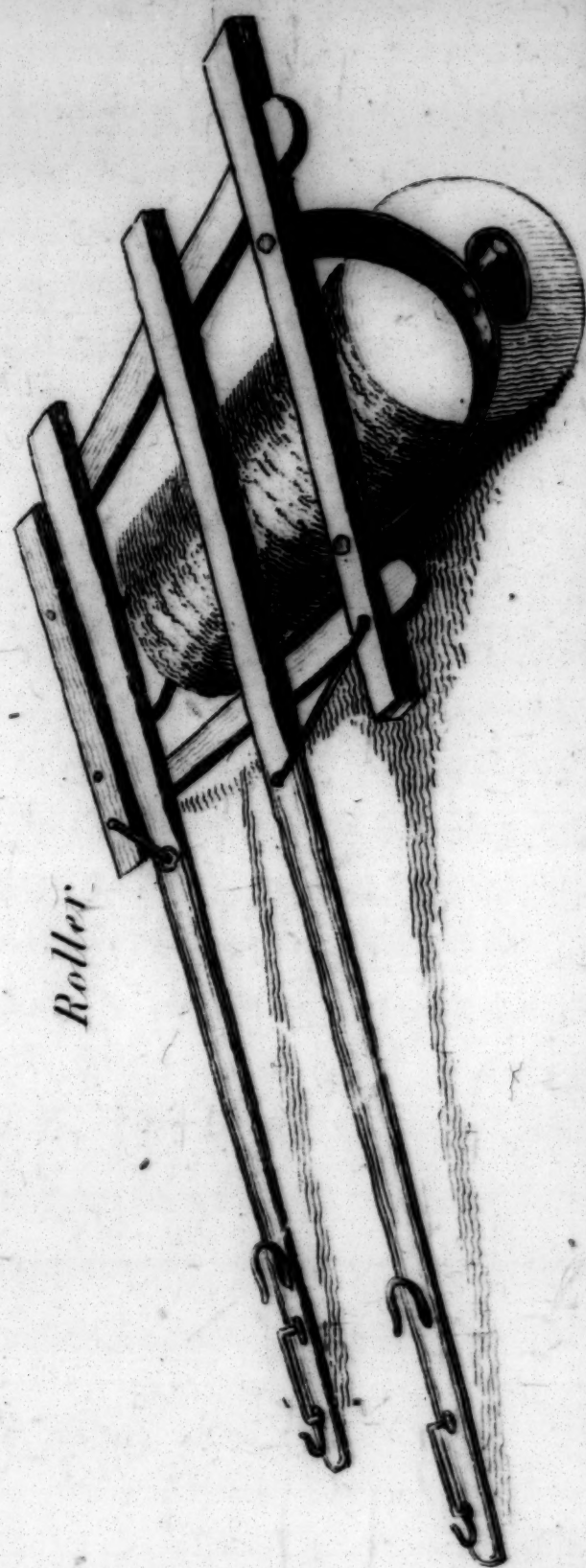


Common Harrow





Reaping fork



Roller

Rollers are generally of free-stone, $5\frac{1}{2}$ feet long, 15 inches diameter, weighing, when mounted, about 12 cwt. drawn by two horses, and cost about two guineas. Every farmer has at least one, for smoothing the grass-lands, to which it is peculiarly adapted *; also for breaking the clods of rough land in tillage: in which it is not clear that it is so effective as the ancient clod-mallet; for although, in some cases, there may be more work done for the same expence, in general there is less †, and not so completely to the purpose, besides giving the whole land, without distinction, the same pressure, whether necessary or not.

Of *drilling* and *hoeing* instruments there are many; usually of a plain and effective construction. The drill-barrow for sowing one row at a time, is a simple machine, adapted to different grains, and small seeds, in any required proportion. A machine of this kind, for sowing several drills at once, and at such different degrees of width as may be wanted, would be a great acquisition, provided it were not too complex.

It may be proper here to take notice of the *weed-hook* for cutting thistles, &c. among standing corns, which, although but a simple implement, is perhaps the most perfect of any we have. Notwithstanding, that it is constantly rubbing against the ground, when it is used, yet being concave in the

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under

ends of the harrow, at which the numbers commence. Were a double harrow made on this construction for two horses, (and a square of six feet would be sufficient) it would obviate that vexatious occurrence which is continually taking place, of the harrows *riding* on one another, more completely than any device yet contrived; and at the same time, it would be still lighter and cheaper than a pair of common harrows, and more effectual in its work, as every obstruction would get the weight of the whole. It should, however, have *stop hinges* in the middle, which would admit it to form an angle down, but not upwards.

* It is of the greatest benefit for pasture land to be rolled often in the winter, though very wet; it destroys the fog, besides many other advantages.

Anon.

† A man with the clod-mallet will go over two acres a-day, if it be not an extraordinary case. A man and two horses will have enough ado to roll six on rough lands.

under side, the edges are preserved entire for several years. It costs (without the staff) only 2¹/₂d. and weighs about 2 oz. It is only made, so far as I know, in East-Lothian, where it is to be had in the shops at Haddington. The engraving is not very distinct.

The *reaping fork*, for collecting into sheaves, corns that are cut with the scythe, will probably be adopted more generally, as the practice of mowing corn becomes more common. The prongs *a a*, in practice, are pushed in below the *swath*, raising accurately the straw from the stubble, while the prongs *b b* serve the double purpose of retaining the cut corns from scattering backwards; and of forming the *size* of the sheaf, which is regularly determined when the straw accumulates as high as the top of these prongs.

There can be no question, that with this implement corn can be collected faster and more regularly into sheaves, than merely by hand labour.

Wheel-carriages, employed in husbandry, are only the *close-cart*, and the *corn-cart*, both of a light construction; drawn by two horses, and of late by one. The large wains, or heavy four-horse waggons, in English husbandry, are reprobated here. Two horses in a cart are commonly loaded with 18 or 20 cwt. One horse draws still more easily 12 cwt.; even 24 cwt. is frequently put to a single horse, and 30 cwt. on good road is not uncommon. This cart has lately been much improved: placed on its axle, the bottom at each side projects over the inner head of the naves, (see the view of the *coup-cart*) as far as nearly to touch the spokes of the wheels; from which acquired breadth, the capacity is enlarged, while the side standards being brought nearer to a perpendicular, are able to sustain more weight. The dimensions are, length five feet three inches; breadth below, four feet; breadth above, four feet three inches; depth, one foot three inches; containing about a cubic yard. Price of a cart, painted, 1 l. 15 s. not including wheels, axle*, nor mounting, which may amount in

* Wheels are generally 52 inches high; axle is commonly of iron, from an idea, that, in the end, it is more economical to have them so; for it is not found

in all to 7 l. or 8 l. more. The *corn-cart*, which is only placed occasionally on wheels, for carrying hay, or corn in the straw, is composed of standards, rods, and spars, without deals, but is broader and much longer than the close-cart, that it may hold a more bulky load. It costs from 20 s. to 30 s. See the plate.

Fanners, for cleaning corn, have been in general use here for more than fifty years. They run 12 bolls an hour, and in two operations, or in three at most, the corn is completely cleaned; four people are necessary to attend them, for *sifting*, *riddling*, &c. Some fanners perform these operations also by which two persons less are required. They cost from 2 l. to 5 l. and last 20 or 30 years.

Threshing mills, lately invented, were very soon afterwards introduced into this county. They are now very general, and of various dimensions and construction, wrought by one, or two, or four horses, or by water, which last is the best method of all. One-horse mills will thresh a boll in the hour, the others, in that proportion or more. They cost from 25 l. to 60 l.: some perhaps more, particularly when they are made to clean the corn at the same time, which requires more machinery, as well as more space*.

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CHAP.

found in practice, that iron axles, are either more or less difficult to draw, although not half of the thickness, than axles of wood.

* As there are still many improvements making on this machine, it would be premature at present to describe its mode of operation, which indeed could not be well done without a drawing. Its general principle, however, consists not in beating the corn, but in swingling it like flax, by means of a cylinder four feet in diameter, which moving at the vast velocity of 240 revolutions in a minute, and giving four switches each time, expels the grain completely from the straw, and has several other advantages over common flails besides; such as, performing more work in a smaller space, with fewer hands, and even these may only be old men or women, or girls; threshing damp corns that no flails could accomplish; a circumstance particularly useful in wet harvests, where the corns might otherwise perish altogether in the fields; in threshing smutty wheat, without communicating the mischief to the sound grain, as the smutt not being broke, as with flails, comes out *whole*, and is blown away with the chaff. A more particular description of this machine, with engravings, may probably appear in the East-Lothian reprinted Report, in which county, it should seem, that the invention originated.

CHAPTER VI.



OF INCLOSING.

INCLOSING appears to have been but lately introduced, and to have followed, rather than preceded, the other improvements here. There are, indeed, a few old inclosures to be met with in the vicinity of almost every gentleman's seat; but these are always of small extent, being merely what were occupied by the proprietor himself; the whole lands let to the tenants having continued till of late altogether undivided, by either wall, hedge, or ditch. Even so late as 30 years ago, there was hardly a farm inclosed in the whole county; for it is only within these few years that the subdividing of lands has come into general practice; and this owing as much to the exertions of the tenants, as to the proprietors of the grounds †.

Modes of fencing. The first fences, at least those which can be traced back 50 years, were generally of high stone walls, executed in a style of great sufficiency; which, however expensive they might prove, were perhaps unavoidable, from the open state of the adjacent lands, from which a few detached inclosures were liable to be broken into by the cattle of the neighbourhood, at that time accustomed in the winter to an unlimited range over the whole fields.

At present, the following are the kinds of fence in use;
1. *Dry stone walls*, four feet high, with a double coping of turf:

† One great obstacle to inclosing, arose on the part of the proprietors, who exacted too high a rate of interest from their tenants for the money they thus laid out on their own lands, which deterred the latter from agreeing to the proposal; six, seven, or $7\frac{1}{2}$ per cent. was the usual condition, besides the expence on the tenant of upholding the fence.

turf: if built of free-stone, in which the county abounds, and having a broad and deep enough foundation †, stand for a long period, with ordinary attention. The price depends much on the carriage of the stones, which is more or less in proportion to the distance from the quarry. Stones are quarried, or purchased for 3 d. or 4 d. a cart-load; 36 load to the rood. The mason work 8 s. or 10 s.

2. *Stone and lime walls*, are generally preferred by those who have a permanent interest in the lands; and where good stones cannot be had, lime becomes indispensable. The mason is paid 12 s. or 15 s. for this kind; it requires the same quantity of stones with the other, six bolls of lime-shells, and six carts of sand, the rood. The shells are at different prices; from 12 d. to 21 d. the boll. This wall is usually five feet high: 21 yards make a rood, and will hence cost from 50 s. to 3 l. 10 s.

3. *Thorn hedges*, which make the most pleasant and the warmest fences of any *, are not so generally used as could be

† It was remarked this summer by an intelligent traveller, from America, that the foundation of stone walls, should be at least 15 inches below the surface, so as not to be affected by the frost, in which case they would stand much longer.

* Inclosures are productive of other and much higher benefits than merely defending lands from cattle, &c. The warmest air lies nearest the surface of the earth; being that portion of the atmosphere, which, like a blanket, Nature spreads over the soil and its productions: and hence fences of all kinds tend more or less to prevent such a valuable covering from being blown off by the winds. The particular kind of fence best suited to this purpose seems to be a thorn hedge. This forms a kind of net-work, partly solid and partly open. The solid parts prevent the immediate passage of the wind, make it rebound, mount to a considerable height, and not be able to recover its former low direction along the surface of the earth, till some space of time after it has passed the top of the fence. The open parts, or interstices, on the other hand, suffer the wind to pass through, but by dividing the great stream into numberless small currents, and by variously bending and distorting the lines in which these currents flow while passing between the branches, its force is almost altogether broken; so that what was a blast on one side of the hedge, may be said to come out a breeze on the other. While a hedge-fence, from these circumstances combined, protects the lands from boisterous weather to a great distance beyond the place where it stands; it also in calm weather allows

be wished, from the long time they require to be attended to before they become sufficiently fencible: they are however coming more and more into practice, and are treated in the following different ways: 1. To insure a strong fence from the beginning, some people plant a double hedge, with a deep *ditch on each side*, and by way of embellishment, stick a row of trees in the narrow space between. This never fails to become abortive in the end, the wood and the thorns mutually injuring one another; and even where there are no trees planted, the one hedge hurts the other, so that it often happens, that both in a few years become *stunted*, and perish †. 2. The thorn fence most generally adopted is raised from *one ditch only*, with a single or more properly a double row of thorns. The ditch three feet wide at top, 12 inches at bottom, and three feet deep ‡, is made for 6 d. the rood of six yards. The thorns
are

allows the air to circulate and pass through it to either side; a circumstance highly favourable to the healthy growth of the immediately contiguous crop.

Stone fences have none of these advantages; unless it be, that like to the solid parts of a hedge, they in a similar manner prevent the immediate passage of the wind; but this is generally in a much smaller degree, as hedges, for the most part, are of a much greater height. One circumstance, however, much in favour of walls, is, that they can be erected in a short space of time; which gave occasion to the late Lord Elibank to say, "he preferred a wall because it was major the first year." This is true, indeed; but it must be observed, however, that it is major, rather in its character of wall than of fence.
G. R.

"Hedges do evidently afford more shelter to cattle, &c. when feeding, than a stone wall does, and still more than an open field; but I never could discern that similar soils and situations, when inclosed with a stone wall, was obviously less fertile, than where inclosed with a hedge, not even with the addition of trees; but I have felt very seriously, that when inclosed with hedges, that, if as tall as to break the wind when in corns, the part of the field nearest the fence was by far the least productive, especially on the south and west sides, and from 40 years experience in farming land inclosed with hedges, that it is of great advantage to keep them low when in tillage." T. S.

† Where the ground is not valuable, and the soil unfavourable, a double ditch with a hedge on each side, is the most effectual method of procuring a thorn fence. I have planted some hundred roods in that way, and never found that the thorns in the one side, were the least detrimental to those in the other. The fate of the trees has, in general, been as described, though not always.
T. S.

‡ In wet, or muirish soils, the ditch is five wide at the top, and costs 10 d. the rood.

are planted in a single row at four inches asunder, in a double row at six inches; and as they cost 1s. the 120, the expence of 21 yards in length, equal to a rood of a five feet high wall, amounts to only 2s. 9d. the single row, and 3s. 3d. the double, which is obtaining a fence on very easy terms, though indeed it will require six or seven years, with some little expence in cleaning, before it may completely answer the purpose. 3. In dry lands not affected by under water, nor liable to be overflowed with land floods, the thorns are planted *without any ditch* at all, which, in such situations, is the most judicious practice of any, as the plants thrive better, having a sufficiency of moisture; the hedge itself occupies as little room as a stone wall; and besides being obtained at less cost, it admits of being kept clean with the effective operation of digging on each side with a spade ‡.

4. *Hedge and wall.* This is a mode of inclosing, coming more and more into repute, as it partakes of the nature both of a quick fence and a stone wall, enjoying the general warmth of the one, and having a portion of the stability of the other. It is performed by building a slender wall about three feet high, immediately before and close to the row of young thorns, rising to the height of 18 inches above the level on which these are planted, and composed of dry stone, in some cases pointed with lime, which does not cost above 8d. or at most 1s. the yard in length. It affords a complete shelter to the young plants, and as these grow up, their branches project over this wall, and being trained up, on a line with it, the united effect of both, is to form a fence impervious to every kind of cattle, even to dogs and lesser animals. This fence is mostly used along the sides of roads, to which it is peculiarly adapted, as it becomes when complete a better defence against intrusion, than any stone wall whatever.

A va-

‡ Thorns never thrive better, than when properly planted in the face of a small ditch, with the earth that comes out of it laid over them; where the ground, however, has a natural staple of such a depth, as to afford the same nourishment to the plant, that is acquired by throwing up a small ditch, it may certainly answer.

A variety of this kind seems also much intitled to attention; the wall of dry stone, being built at the *back* of the thorns, on the top of the bank of thrown-up earth, in which situation it serves as a *paleing*, but lasts much longer, and gives a shelter to the young thorns, which the other cannot, while it may be so slight as to cost little more expence.

Pruning of hedges. The fashionable mode of pruning hedges formerly, was to cut them over four feet from the ground, keeping the top quite flat, and the sides neatly clipped. In the course of a few years pruning, the head acquired a solidity almost impenetrable, but the lower parts being overtopped, became thinner and thinner, till, in the end, the lateral branches failed altogether, and left the upright stems bare, which rendered the hedge not quite so fencible, as it permitted dogs to creep in, the smaller cattle to get out, and also tended to destroy the thorn itself. A more rational plan is now adopted. The thorns are pruned in a regular flop from the bottom, ending in a point at the top; the whole hedge having hence a free exposure to the air, and its growth encouraged from every part †. The Duke of Buccleugh's hedges around Dalkeith, are beautiful examples of this kind of trimming. They may almost be called living walls. The utility of the plan is striking, and forms a sufficient apology for such a deviation from nature, although the grandeur and beauty of the unpruned hawthorn in full blossom, is unrivalled by any vegetable production in this part of the kingdom.

Some people allow their hedges to grow unclipped, but at certain intervals cut them down almost to the ground, from which they spring again, and are in a few years as strong as ever. When the lands are in tillage, the hedge is cut down; but in the course of rotation, when they revert again to pasture,

† This is obviously the best method of preserving hedges, after arriving at a proper degree of maturity, but until the size of the wood has acquired a strength to resist cattle, the top ought never to be lopt, and even the collateral branches but gently. A thorn increases slowly in thickness after being cut over, and very little ever after, if kept low.

ture, the hedge, by that time renewed in its full vigour, becomes a new fence for the cattle. In this manner, instead of occasioning the expence of annual dressings, it becomes a source of profit to the farmer, from the value of the brushwood, which is here applied to many purposes.

5. *Galloway dike.* A very particular and formidable looking fence is used in the moor-land parts of the county, where the pastures, being generally fed off with sheep, a thorn hedge is unsuitable. This is what is called the *Galloway dike*, built of whin-stone, usually five feet high. It is the manner in which it is constructed that renders it singular. To the height of $2\frac{1}{2}$ feet, it is built neatly, but without mortar; in breadth from 20 inches to 2 feet. Upon this is laid a thin course of flat stones, which project three inches over the under part. Above these are placed, in a seemingly careless manner, a set of rugged round stones, which in building are brought gradually to a taper, ending at last in stones of three or four inches diameter at the top; but so thin laid, that the light is seen in numerous large vacancies, and the wind blows through them as through a hedge. From its tottering appearance, cattle of all kinds are shy of approaching this kind of barrier; even hares avoid it. Being well founded, and having little top-weight, it stands well, and is easily repaired when it falls into disorder; which, as no living creature likes to attempt it, is very seldom the case.

Form of inclosures. Inclosures are too commonly formed by straight lines into regular figures. There is an absurdity in this: for if the land itself be irregular, and also wet, the ditches, which constitute a chief part of the fence, should be laid out in such a direction, as to carry off the water at the same time. Even where the ground is dry, and lying regular, the nature of the soil should be adverted to, that land of opposite qualities may not be included in the same close. The affectation of uniformity is but a small consideration, opposed to the loss that must arise from such unnatural division.

Inclosing must have had the favourable effect of helping

to increase the number of mankind, by affording an increase of employment, arising from the various operations of building, ditching, hedge-trimming, &c. which attend it. But the most important consequence of inclosing is, that it acts as a stimulus to population, from its effects on the soil; which being from that cause rendered more fertile, will produce the necessaries of life in greater abundance, and hence enable any given quantity of land to maintain a greater number of people*.

Gates. These are of many different figures, according to fancy. The most approved, however, are of one leaf, constructed of four or five horizontal bars; having one placed diagonally for strengthening the whole. This diagonal bar ought to rise from the under end of the back post, to the upper end of the one opposite, instead of the reverse position, which is usually given to it. In hanging the gate, most people adjust it to a perfect perpendicular, from which it naturally tends to depart; whereas, were it to lean a little backward at first, it would not only move much easier, but its natural declination would be continually towards the proper position.

C H A P.

* Turning arable lands into pasture, or from one species of stock unto another, which is thought to have a tendency to depopulate a country, is not peculiar to inclosures, for we have heard the greatest clamour that has yet been raised on that subject, proceed from a quarter of the country, (the Highlands) where inclosing is certainly not very prevalent, and where indeed, it was not so much as alledged to have been a cause for complaint. Yet many people, otherwise intelligent, give into this popular theme of declamation against this mode of improvement, as if it were possible, that whatever tends to meliorate any particular district, could be injurious to the general prosperity, or, that a too great propensity to lay lands into pasture, (like to every other speculation too far carried) should not operate its own remedy naturally from being overdone. A nation of shepherds is no more to be apprehended than a nation of tailors.

CHAPTER VII.



ARABLE LANDS.

SECT. I.—*Tillage.*

THE ploughmen here, are not supposed to be very correct, the tillage of the lands being in general performed in an indifferent manner. As there is, however, no general rule without exception, it must be acknowledged, that specimens of great accuracy can be produced.

In laying down either for corn or pasture, particular care should be taken, if the declivity will admit of it, to throw the ridges as near east and west as possible; for when they are laid south and north, particularly in long round lands, the crop on the east side is commonly very defective*.

The arable lands are laid out, in general, in fields or inclosures from six to ten acres each; the ridges lying in the direction most suitable for carrying off the water, or in that which renders the ploughing least difficult. It was formerly the universal practice to form the land into high and broad ridges, commonly from 24 to 60 feet wide, and elevated at least three feet higher in the middle than in the furrows: but this mode, which was perhaps consistent enough with the heavy cumbrous fix-horse ploughs then employed, has been gradually laid aside, as fewer horses were applied; and in particular, since the introduction of the two-horse plough,

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which

* Having the Lancashire Report before me, I have been induced to adopt almost the very terms of what is above said, from it; reversing, however, the circumstances, which appear to be here directly opposite to what prevails in that county.

which has of late become general in this county. The common method now is, either to lay the lands into ridges of 18 feet broad, and which, on heavy soil, are alternately *gathered, cast, and cloven*, or, what is becoming every day more general, into ridges of 10 feet only, which are uniformly cloven, at every operation; the furrow becoming the crown, and the crown the furrow alternately. This last mode has many advantages to recommend it. In the first place, the ground itself is kept at an uniform degree of thickness, the soil at the furrow being equally deep with the soil in the middle. It is tilled with greater facility, as the plough has always an empty furrow to enter upon, and the danger of *balking* in the *feering*, which so readily occurs in drawing the first furrow on the crown of a high gathered ridge, is altogether obviated. It is also more economical, not only as being ploughable with more expedition, but as it forms a proper breadth for *one cast* of the sower, for three harrows to cover, and in harvest for two reapers to cut. There is thus a proper distribution in the labour, which does not so readily occur in ridges either of a greater or less breadth. This mode of laying out lands is not however so suited to a damp soil, or where, from flatness of the surface, there is a difficulty in making the rain water descend; in either of which cases, the grounds, after a wet winter, are found to be too long of getting into a proper degree of firmness to admit of the seed operations in the spring; so that many farmers have again brought their lands back to the 18 feet dimension of ridges; which, admitting of the operation of *gathering* in the tillage, lays the ground into the requisite state of firmness*. Where the grounds are very steep, the ridges are sometimes

* This is all very just; land laid out in these ten feet ridges, being ploughed the most thoroughly of any, and where there is declivity enough, even wet land, will be as soon dry, lying in that state as in any other, and greatly rectifies the unevenly reaping that often takes place, betwixt the one side and the other of gathered ridges.

times directed across the declivity, with merely as much slope as to allow the water to fall easily off. The advantage arising from this mode consists in two particulars; first, the operation of ploughing is more easily performed; secondly, the water running off with less rapidity, occasions less waste of soil. In laying out the ridges in this manner, it is of much importance that they point in such a direction, that the right side of the plough, in going up hill, may be to the downward, which will cause the furrow to fall over from the plough, as soon as it is separated from the firm land. Were the right side of the plough to be to the upward, the new-cut furrow would always lean upon the plough, which, besides making bad work, would occasion an unnecessary addition to the draught, in the very situation where it is naturally most difficult. It is astonishing, that this simple distinction is not more attended to.

There are some situations in this county so very steep, (for instance in the arable hills near Gala-water,) that the plough cannot operate against the declivity at all. Some people in this case use a plough with a shifting mouldboard and culter; so that the furrow is turned to the downward both in going and coming. Others, who object to this plan because it occasions too rapid a descent of soil from the upper parts, where it is naturally too thin, and accumulates it upon the lower parts, where it is already too thick, cause the plough to ascend without a furrow, and *till* the whole down the bank in a straight line. They, no doubt, by this mode occasion somewhat more labour; but I imagine they are right in their idea, that hence they do greater justice to the land itself.

In some parts of the moor-lands of this county the heavy plough drawn by four horses, and sometimes with two oxen in addition, is still in use, with the still more uncouth, high, crooked, broad ridges.

A pair of horses, without a driver, plough in general about an English acre in a day. Comparing this with what takes place in Norfolk, where two horses in a plough till two acres in a day, it should be adverted to, that it must be much more laborious to plough the tenacious, and stony soil here, than the

the light, free lands of that county. Oxen are very little used except in the moor-lands, and even there, but seldom.

SECT. 2.—*Fallowing.*

This is practised here, not so much as making part of a rotation, as from other circumstances, which render it sometimes necessary. Thus, when lands are rendered foul, from the occurrence of a bad season, or barren, from too frequent repetition of exhausting crops, summer fallow is induced as a corrective, and its effects are always salutary. On light, or dry lands, however, it is seldom found necessary to fallow; for these can be got into good order for a crop of potatoes, or of barley, or of turnip; or even more early in the season, for beans or pease; but heavy or wet lands are not so pliable, and although it is clearly *possible* to labour them also, without fallowing, yet it is found to be more *profitable* to have recourse from time to time to that expedient, and its operation is generally more effective and lasting on such soils, so that it is seldom necessary to be repeated oftener than once in seven years.

The first ploughing for summer fallow is commonly made early in the spring, not so much from a conviction that it is better then, than before winter, as from a regard to the accommodation of the labour to the other crops; it being esteemed to be more requisite, that the barley, the potatoe, or other spring-crop lands, should have the first furrow, called here *winter* fallow, immediately after the autumn; and, as the winter generally sets in early, it is not always in the power of the farmer to get the summer fallow ground ploughed at that time too; it is, of course, put off to the commencement of the spring, and is generally the first ploughed land after the winter storm, when the ground would be too wet to receive a seed-furrow to any crop; and thus it becomes more economical in the labour, as no other tillage could be carried on at the time.

The second furrow is given after the barley seed is finished, in the last week of May, or beginning of June. By this time a crop of weeds has made its appearance, and of course is ploughed

ploughed under and destroyed. In a fortnight after, the land is harrowed, and with that operation another crop of weeds is put an end to. The third ploughing takes place about the first of July; the fourth, about the first of August; and the last, about the first of September; at all of which, crops of annual weeds are destroyed, as are likewise intermediate crops at the different harrowings which take place regularly between the ploughings; and last of all about the middle of September, or first of October, the wheat is sown, and even then a great crop of annual weeds remain to be rooted up by the harrows; so that during the whole process, no fewer than eight different crops of these weeds are destroyed, as well as all the root weeds, which are from time to time picked carefully from off the land and burnt. An advantage hardly attainable by any drill crop whatever, besides the more effectual pulverization of the soil, from the several cross ploughings, and harrowings, that are given.

When dung is applied, it is generally laid on about the end of August, immediately after the last ploughing; but in many cases, where the soil is naturally good, it is forborne till the second ensuing crop, as it is found that the first crop is in danger of being too rank, and of course *lodged* before it is ripe, if the land is dunged the same year that it is in summer fallow; and when one reflects on the many crops of weeds that are ploughed under, or rooted up, and thus consigned to putrefaction during the process of fallowing, it should not appear surprising, that dung in this case should be unnecessary. Indeed the strongest crops of wheat that I have yet seen, have been on land, summer-fallowed without dung.

SECT. 3.—Rotation of Crops.

A regular rotation is not to be looked for. Independent of the changeable nature of the weather, which often counteracts every settled plan, the very progress of improvement occasions an alteration from time to time, in almost every department of husbandry. There is, however, a system of management

management which is commonly followed, though the manner in which it is carried on, must vary as circumstances may require. The rule is to have alternate green and white crops; or alternately those that meliorate, with those that exhaust the soil. The following, when the seasons admit of them, are examples of rotation in this county.

1. For a rich loam.

1st year, summer fallow, without dung.	5th year, barley, ground thrice ploughed.
2d ——— wheat.	6th ——— clover.
3d ——— beans and pease, the land dunged.	7th ——— oats.
4th ——— wheat.	8th ——— summer-fallow, &c, as before.

2. For rich heavy lands.

1st year, summer-fallow, dunged.	5th year, barley.
2d ——— wheat.	6th ——— clover.
3d ——— oats *.	7th ——— oats.
4th beans and pease.	8th ——— summer-fallow, &c, as before.

3. For a hilly district.

1st year, turnip, well dunged.	4th year, oats.
2d ——— barley, or oats.	5th, ——— turnip, well dunged, &c. as before.
3d ——— clover.	

This is the rotation of Mr Brodie at Upper Keith, on a dry foil in a cold situation, and in the cultivation of which he is not excelled by any farmer in such circumstances, perhaps in Great Britain. Indeed he has probably hit upon the true system for a hilly district.

4. For

* Another rotation is, in place of oats after the wheat, (unless where wheat is again intended after the beans,) to put barley after the wheat; grass seeds being found to thrive better with barley after wheat, than with barley after pease or beans,

4. For a dry soil.

1st year, potatoes, well dunged.	4th year, oats.
2d ——— wheat.	5th ——— potatoes, well dunged, &c. as before.
3d ——— clover.	—————

This is practised in several farms on a dry soil in the vicinity of Edinburgh.

The following was the rotation of the old school, but which has fallen into disuse:

1st year, wheat, the land dunged.	5th year, wheat, the land dunged, &c. as before.
2d ——— beans and pease.	No summer fallow, no clover,
3d ——— barley.	no turnips.
4th ——— oats.	—————

This was the best system in those days, and must have still prevailed, if the landlords of former times, like some of their successors, had bound down their tenants to it for ever, because it happened to be the best mode of cultivation then known. At the same time it may be remarked, that, in the above circumstances, (neither clover nor other green crops being known,) this rotation is perhaps as profitable on the whole, as any that could have been devised. The dung *forced* the crop of wheat, and this succeeded by the *black crop*, which seldom failed to prosper, left the land in a fine *heart* for barley, to which three ploughings being given, was far from being a bad preparative to the succeeding crop of oats, and these, of course, thriving tolerably well, left the land, although exhausted, pretty *clean* for the wheat, which the dung, as before, could carry through.

SECT. 4.—*Crops commonly cultivated.*

W H E A T.

There may at present be 7000 or 8000 acres of this crop cultivated in Mid-Lothian : 50 years ago there were not 1000, and still less at a more early period *.

1. *Preparation.*—It is sown, 1. After summer-fallow ; the last furrow to which is given in the end of August, leaving the land as cloddy as possible ; the seed is sown in September, or early in October. Land naturally rich receives no manure the year that it is in fallow.—2. After rag-faugh ; that is grass-land broken up in the summer, after the hay is cut, and three times ploughed, and dunged. The sowing is about the same time with the former, and produces frequently as good a crop.—3. After potatoes. This makes the best return of any, and is also better adapted to wheat than any other grain.—4. After beans or pease. In this case the ground is sometimes dunged to the wheat, and sometimes only to the crop preceding. There is more sown in this succession than in any other, but the return is the most uncertain of any ; being in some cases very great, and in others hardly any crop at all : depending very much on the sowing season, which is rather apt to be unfavourable, from the lateness of clearing the ground of the beans or pease crop. 5. After oats. This is now little practised ; but when the land is in good order, and well

* It was enacted by parliament in 1426, and again in 1457, that every man, tilling with a plough of eight oxen, shall every year sow at the least a firlof of wheat, half a firlof of pease, and 40 beans. The culture of these grains could not have been very general before these periods. Even so late as 1727, the culture of wheat was so very limited in this county, that a gentleman, still living, relates, that when he cultivated it, to the extent of eight bolls sowing on a farm of about 90 acres of arable land, within a mile of Edinburgh, it was esteemed to be so extraordinary an exertion, as to attract the attention of the whole neighbourhood. There could not be above 500 acres at that time in the whole county. All the old farmers agree to this.

well dunged, it is as sure a crop as any, and the grain as fine. 6. After turnip. As it must be late in the season till this can be done, it is not, at all, general, as most farmers prefer a crop of barley or oats. 7. After clover, with one furrow. It is only on light lands in fine order that this is attempted with success: the practice at any rate is not very common. Wheat is very seldom sown after barley, because it is always attended with the very worst effect: for, however well it may look in the spring, it falls off totally before it comes to the fickle.

2. *Sort.*—As it generally degenerates in a few years, it is therefore necessary to renew the seed from England from time to time; in consequence of which, there can be no species peculiar to the county, though there are perhaps all the kinds known in the island; red, white, yellow, &c*. In general, the red kinds are most productive; but the white are preferred by the bakers, particularly for the second flour, of which the greatest proportion of bread is made.

3. *Steeping.*—There are two different methods of steeping, or rather of *pickling* feed-wheat in this county. In the one, the wheat is put into a tub of water, in which has been dissolved as much salt as gives it a strength sufficient to swim an egg. The weakest of the grain rises of course, and is carefully skimmed off. The seed, (drained of the water) is then spread on the floor, and dusted with quick-lime, till it is dry enough to be sown with the hand, and may either be

M 2

sown

* A very particular kind of spring wheat was sown by different farmers eight or ten years ago in the vicinity of Edinburgh, but was at last given up, as not answering fully the expectations that were formed from it. It admitted of being sown as late in the season as the end of April or beginning of May, and was ripe at the ordinary season, in August or September, producing very weighty grain, and as high as eight bolls an acre. It did tolerably well for a year or two, but one inclement summer, (1792) completely finished it, as the crop, being either all blacked or blighted, was fit for nothing. I have not heard of it since.

sown immediately, or not, as may be convenient. In the other method, the seed is spread thinly on the floor, and only *sprinkled* with urine, (whether stale, or recent, is not material) at the rate of about an English gallon to three bushels; care being taken, by turning it, that the whole be equally moistened; it is then dried as in the former method, and should be sown soon, as it is beyond all question, that instances have occurred, in which the seed has been damaged, from being long kept after it was pickled, and even from receiving too great a quantity of liquor*.

4. *Seed.*—Wheat is, with few exceptions, sown broad-cast, from 10 to 18 pecks the acre, according to the time of sowing, and state of the ground: the earliest, and land in the finest order, requiring least seed.

5. *Time of sowing.*—Wheat admits of greater latitude in this respect, than any other grain we have, it being sown with
success,

* I know that this is denied by some farmers, but I know also, from experience, that it is a fact, though whether it is the pickle, or the lime, or both that occasions this, does not seem to be clearly determined; yet from the result of the following experiment, it is at least ascertained, that urine, by itself, is capable of destroying the vegetative power of grain. For, about 4 years ago, having steeped a firlof of barley in urine for about 3 hours, and immediately thereafter causing it to be sown at the usual rate, in the middle of a field, unmixed with any other, there was not above a half of it came up, and even that grew so weakly, as not to produce above a third-part of the crop with the rest of the field.

The two modes of pickling above mentioned seem to be useful from different causes. The salt-steep has the effect to exclude from the seed the weak grains, and in that view only it should seem that it is beneficial; for it does not appear clear, that it destroys the principle which occasions smut so effectually as the other, for that is found to prevail more among wheat prepared in this manner, than in the method by sprinkling with urine, which either imparts a strengthening quality to the grain, thereby enabling it to withstand more fully the inclemency of the weather, to which some people attribute the cause of smut, or, it destroys the seeds of insects among the grain itself, which has lately been conjectured to be the cause of this defection in the crop. In whatever manner it may be accounted for, it is a well-established fact, that either of the ways above stated are beneficial, for smut is always more prevalent, where neither of these precautions against it have been used.

success, during nearly eight months in the year, viz. from the end of August, which is common with several farmers to sow their fallows, to the beginning of April, at which late period, wheat on turnip land has been known to be sown. The most usual time, however, is during the months of October and November.

In general, if wheat be sown dry, (what is here called a *good tide*,) there is no grain stands the climate better in the low parts of the county: in the upland districts, lying 800 feet above the level of the sea, it has hardly yet been tried.

6. *Culture whilst growing*.—It is sometimes harrowed and rolled in the spring. Some farmers assert these operations to be beneficial, while others hold a contrary opinion: for my own part, I never could perceive any difference in the crop in harvest, notwithstanding of frequent experiments to decide the question.

7. *Harvest*.—Harvest commences, at a medium, from the 15th to the 25th of August, and ends in five or six weeks thereafter. Wheat is generally amongst the earliest corn that is cut.

Reaping is performed by the sickle; the scythe being seldom or never applied. Most of the reapers are women, who travel chiefly from the Highlands, 100 or 200 miles for that purpose*. A man binds to eight reapers, who generally cut two Scotch acres a-day, the stubble being from four to six inches high. The sheaves are made about 12 inches in diameter:

14

* Reapers are hired every morning in harvest, particularly on Mondays, at the West port of Edinburgh, where they sometimes amount to thousands. Wages are from 6 d. to 1 s. 6 d. a day, and diet, which costs from 4½ d. to 6 d.: breakfast is oatmeal porridge, about a Scotch pint, with a mutchkin of butter-milk to each; dinner, a loaf of bread at 14 oz. weight, generally at 1 s. 3 d. the dozen, and half a Scotch pint of beer; supper, the same as breakfast. They work from six to six, and are allowed two hours through the day for rest. The Highlanders lie in the barns at night on straw, with a few blankets and sacks distributed among them.

14 of which form a *stook* (shock), in which the two side-rows, leaning together at top, are covered with two sheaves to protect them from rain. It is generally ready to be driven home in eight days, or sooner, to the yard, where all corn is built in round stacks, (*see the ground plan of the farm-yard*) from 12 to 24 feet in width, containing from 10 to 60 bolls, neatly covered with thatch, tied on handsomely with straw ropes. The stacks are generally *staled* (founded) on a layer of furze, thorns, old straw, stones, &c. to protect the corn from damp. Some set them on low pillars overlaid with planks, 18 inches above ground, which saves them completely from vermin also. This mode ought to be general, but it is rather expensive; the proprietors should erect them, requiring only to tenants (whose capital should never be sunk in buildings) to keep them up as they do their houses. In building stacks, in general, some draw a large bag, stuffed with straw, up the centre, which leaves a kind of funnel for the vapour to escape, and thus prevents *beating*, or mow-burning, a circumstance that rarely happens with wheat at any rate.

8. *Threshing*.—This was wont to have been performed with the flail, a laborious employment, now happily in the way of being superseded by the threshing-mills, which are coming very fast into use, so, that it is probable, that in a few years the flail will be given up altogether. When threshing was done by the flail, the thresher was generally paid by the boll, from 5d. to 6d. each, at a time, when the rate of such workmens wages was from 10d. to 1s. by the day. A *barn-man*, of ordinary abilities, commonly threshed about two bolls (one quarter) of wheat in a day, which was indeed necessary to do, in order to gain wages equal to the day-labourer. Many of them, however, threshed much more. I have known a Highlandman, on 3d. worth of food, thresh four bolls a day, for a continuance. This is mentioned as a contrast, to what (by the Agricultural Surveys) appears to be the case in England, where, to thresh a quarter of wheat costs about half as much more than the rate of wages by the
the

the day, (thus when 1s. 6d. is the rate of wages, to thresh a quarter of wheat costs 2s. 6d.) from which it should seem, that to do so, is more than a man can perform in a day, else why should it cost more? whereas here, to thresh a quarter of wheat in a day is esteemed very moderate work, and yet we are dunn'd so much about the laborious exertions of English labourers!

9. *Produce.* The produce is, in some instances, as high as 16 bolls an acre: 10 are, however, esteemed a great crop; 8 are reckoned good; and, in many cases, is as low as 5, or even less. At an average, I should calculate it at $7\frac{1}{2}$ *. Edinburgh itself consumes much more than is produced in this county: the farmers have therefore every inducement to cultivate it, that can arise from their near vicinity to such an extensive market †.

10. *Manufacture of Bread.*—Wheaten bread, from having been least in request in this county, even in the present age, is now more in use than any other, notwithstanding of the present proportional higher price which it bears, it being at an average (between *wheaten* and *household*) above double the price of that from oats ‡, which was, till of late, the bread of

* The average does not produce 7.

T. S.

The wheat firloft is 2197.3 cubic inches.

The barley firloft — 3205.5 ditto.

Winchester bushel— 2150.4 ditto.

Four firlots — 1 boll.

† “ There is more ground hurt, and crops lost, from sowing wheat when the land is unfit for it, than from any other management, where double the increase might have been got either in oats or barley, and the land left in a much better state.” T. S.

‡ By the affize which took place on the 28th of November 1795, the quartern loaf, weighing 4lb. 5 oz. 8dr. at an average costs 14d. which is above 3d. the lb.; at the same time, oat meal was selling at 16d. the peck of 8lb. which would produce near 11lb. of bread, about $1\frac{1}{2}$ d. the lb. weight. This manifest difference in the prices was not, however, sufficient to overcome the partiality of the people in general to wheaten bread.

of the people; so that part of our present distress, on account of the dearth of that necessary of life, arises from our own more luxurious stile of living, by which we are led to despise the food of our ancestors, and even that to which we were ourselves accustomed; for the preference given to wheaten bread, particularly among the labouring people, has only prevailed but of late; although it does not appear to have had the effect to make them either more robust, or to enjoy better health, than formerly.

The progress of this luxury may appear from the following state of the quantity of wheat grinded, in different periods, at the Water of Leith mills, belonging to the Corporation of Bakers of the city of Edinburgh:

	Bolls.
Thus, in the year 1735, there were grinded only	17,227
in 1740, it had increased to	20,520
in 1750, in nearly the same proportion to	23,920
in 1760, still farther to - - -	33,887
in 1770, to - - - - -	42,895
in 1780, - - - - -	46,222
in 1794, to - - - - -	57,817

This increase, however, is still less than the real augmentation of the consumpt of wheat in the county; for, at the period 1735, these mills probably made two-thirds of all the flour used, which would thence not much exceed 25,000 bolls yearly; whereas now, from the many additional mills that have been since erected, it is supposed that not above 2-5ths of the wheat used in the county is grinded at the Water of Leith: hence then the present consumpt should be 144,540 bolls, a quantity nearly six times greater than was consumed only 60 years ago, and is also about three times more than the county of Mid-Lothian, it is conjectured, can send to market, annually.

In the manufacture of wheat at the Water of Leith mills, which are perhaps the most correct in the county, the flour is dressed through a wire boulder $7\frac{1}{2}$ feet long, and 22 inches in diameter: the first flour passes by a 58, the second by a

50, the third by a 38, and the small bran by a 16 thread in the inch; the great bran comes out at the end. From 15 bolls, which is the common *grist*, and each boll 240 lb. weight, which may be the average of the wheat of this country. The following may, in general, be the produce:

	B.	F.	P.		lb.
Fine flour, - -	12	0	0	at 128lb. the boll -	1536
Household, - -	10	2	0	ditto - - - -	1344
Third, or Pollards, -	0	2	0	- - - - -	64
Bran, - - - -	4	3	3	- - - - -	632
Lost in grinding, -	0	0	3	- - - - -	24
					3600

Though the quantity of fine flour is greater than the household, when it comes from the mill, yet the practice in baking is the reverse, as, from the greater demand for household bread, 3-4ths of the whole are of that kind, and only one of wheaten; it being a practice with the bakers, to make their *sponge* always of fine flour, and otherways to mix the wheaten flour with the household, in such proportion as may answer the greater demand for the latter. Yet, in making the affize by the magistrates, it is always supposed, that 1-half of the bread is fold as wheaten, and the other as household; of course, the bakers have not that profit, or recompense for their labour, that the law supposes them to enjoy.

Bakers, in general, buy the wheat themselves from the farmers, or merchants, and have it grinded under their own inspection, or according as they may direct, at the mill; the expence of grinding is in common 1s. the boll of wheat, but at the Water of Leith mills, where the bakers themselves are the mill-masters, it does not cost above 8d.

The proportion of bread made from any given quantity of flour is as four to three, or, three lbs. of flour makes four lbs. of bread, in general.

The proportion of bread made into tea-bread, pastry, and confectionary, may perhaps be 1-20th of the whole, and the like proportion made into sea-biscuit; but this is stated only on conjecture,

conjecture, there being no certain data from which to calculate.

A baker serves an apprenticeship of five years; he must be a journeyman five years more, before he can set up as master; and five years longer, till he can take an apprentice himself within the liberties of Edinburgh. The apprenticeship fee, entry-money, &c. amounts to about L.60. Apprentices are boarded with their masters during their apprenticeship, but receive no wages. Journeymen have, at present, about L.10 a-year, and board.

Since the stoppage of the distilleries, yeast, which was chiefly obtained from them, has become very scarce. The following substitute has been introduced, and seems to answer the purpose very well:—

Take 1-4th lb. hops, and boil for half an hour in about three pints of water; pour the water boiling hot on 8 lbs. fine flour through a strainer, and take a stout stick, and stir it hard for 10 minutes; then let it stand till almost cold: take a little of the former making, and so much more water, little better than milk warm; pour upon it, taking a stick as before, stirring till all the lumps be dissolved, and reduced to the size of good thick barm:—cover it close up, and let it stand for eight hours; then take some more flour, and water milk warm, and let it stand for other eight hours, when it will be fit for use; which answers the purpose of barm, and at a less expence.

B A R L E Y.

Formerly, this was the favourite crop, received the whole manure, and was, indeed, chiefly depended on for the rent. Now, that the cultivation of wheat is carried to such an extent, barley is less regarded; the whole dung being generally allotted to the former, or to those crops which are preparative to it, while the latter is thrown back in the rotation a year or more. The quantity produced, hence, has been less; but the

the price having of late advanced considerably, the culture has again become of importance*.

The ground employed in barley and bear, or big, is probably still as much in quantity as at any former period; perhaps from 8000 to 10,000 acres.

1. *Preparation*.—This crop follows sometimes wheat, sometimes beans or pease. In both cases, the land is thrice ploughed: the first time soon after harvest; the second (called *stirring*) in April; the last time in May.

2. *Sort*.—There have been different species of seed introduced from England, but which always degenerate, and are later in ripening, though the grain originally is somewhat more plump and weighty. Our own, which has been long naturalized to the climate, is also more generally adapted to the soil. The English grain, however, on very rich land, (which is the only case in which it should be sown) as it is less apt to lodge, gives sometimes a greater produce.

In the moorlands, big, or square barley, with six rows, is still sown; being well adapted to the situation, as it ripens two or three weeks before the long-eared barley†. The whole dung is also applied to it; wheat, its rival, not being cultivated.

N 2

3. *Steeping*

* "The consumption of this article has been very precarious since it came to depend on the distillers, as the legislature frequently interferes and stops their working: 50 or 60 years ago, malt liquor was in such request, that double the quantity of barley was consumed in Edinburgh for that purpose than this county produced; but the mode of executing the excise laws has been so oppressive to the traders, that the half of all the malt liquors now consumed in this county is manufactured in England. When there are bad crops, and late seasons, there is always a brisk trade in making *pot-barley*; but in favourable years, when there is plenty every where, that consumption fails; and if it were not for distillation, barley would become entirely a drug." T. S.

† It is a curious fact, that this species of barley does not thrive so well on the low part of the county as near the hills, which seems to be owing to its ripening too rapidly in a warm situation, before it has fully completed its size; it is also, in this case, harder and more brittle in the straw, while the *awn* adheres more tenaciously to the grain, rendering it much more difficult to *humble* and to be made *clear* from the chaff.

3. *Steeping*.—Not in use.
4. *Seed*.—There are about 12 or 14 pecks of seed sown on an acre.
5. *Time of sowing*.—It is commonly sown from the 1st to the 26th of May*.
6. *Culture whilst growing*.—Unless in hand-pulling the weeds, or cutting them with a weed-hook, no culture given in general.
7. *Harvest*.—It is generally cut with the sickle, and bound into sheaves, and *stooked* (12 sheaves in a *stook*) immediately thereafter; but in some cases, particularly in damp weather, it is left *broad-band* (untied) for two or three days, to accelerate the *winning*; and sometimes *gaited*, (tied slack and set on end sheaf by sheaf,) for the same reason. In a few cases barley is cut with the scythe, and collected into sheaves with the reaping fork. (*See the plate.*) In which mode of operation one girl forms the sheaves, another makes the bands, while two men cut and one binds; in all five people to two Scotch acres in the day. In the more common method by *shearing* with the sickle, nine people are required to do the same work, but of these eight may be women, one man only for binding being necessary; while the other way takes three men at least, which in the general scarcity of men-labourers in harvest, is not practicable to a great extent. Barley is the most difficult of all grain to *win*, requiring generally three weeks standing in the stook before it is fit to be put into the stack, and where, after all, it is more liable to be heated, or
mow-

* Barley is now frequently sown in the end of March, and beginning of April; and where the land is in good order, is found to answer fully as well as when sown late. The grain is always of a superior quality, and if grass seeds are sown they thrive better. With me it proves to be the best antidote against annual weeds, where the land is very light and subject to them; the second, or seed-furrow, having been given two or three weeks previous to sowing the barley.

mow-burnt, than any other grain, which renders it sometimes proper to form a funnel up the heart of the stack to keep it cool.

8. *Threshing*.—Is performed in the same manner, and for the same expence as with wheat, only the threshing mills in general do not *humble* it so completely as was done with flails, which makes it sometimes necessary to be put twice through the mill for that purpose. Some mills, however, are said to do this well enough at the first; a circumstance which, it may be hoped, will in a short time be the case with them all, from that improvement which, in general, these recently-introduced machines are daily receiving.

9. *Produce*.—The produce, though in many instances 10 bolls, or more, will be, at an average, about $5\frac{1}{2}$ or 6. The consumption arises from the Edinburgh brewers or distillers, who use a great deal more than this county has ever produced; besides what is made into pot-barley, which requires many thousand bolls. A firlof of good barley weighs from 72 to 80 lb. English.

10. *Manufacture of bread*.—There is very little barley bread used, although it is understood to be very wholesome, and was formerly more in request; the chief application of this grain being now, to the brewery, the distillation of spirits, and to the making of pot-barley, of which last there is a very general consumption in each family; so that it is probable, that from 12,000 to 15,000 bolls are applied yearly to this purpose in the county. This was formerly manufactured in a very rude manner in a stone-mortar with a wooden-mallet, (called the *knocking-stane* and *knocking-mell*) almost every family having one, but is now universally performed by water machinery, in which, the stone moves vertically, the barley being inclosed in a case around it, and from remaining a longer or shorter time exposed to friction by the rapid motion of the stone, is *bulled* to any required degree of fineness. Of *common* barley, in which little more than the husk is taken off, there is generally, from good grain, about three fourths
of

of the original weight ; but of the finer kinds, particularly that called *pearl*, the quantity is much less ; but it is esteemed to be more nutritive, the more that it is reduced, and is certainly more agreeable to the taste. Barley-broth, (provincially *kale*) is a dish almost indispensable at a Scotchman's table ; but, besides barley, there are commonly several other ingredients, such as greens, and other culinary plants, in the composition, together with the juices of the meat which is boiled amongst it.

O A T S.

Oats are here the most generally cultivated of any grain ; for the meal is still much used as the food of the people, and there is always a great demand for the corn for horses ; while the crop itself is adapted to every soil. They are, upon the whole, a very profitable object of husbandry.

1. *Preparation*.—They succeed, 1. *Ley*, commonly with one furrow : grass-grounds are seldom broken up for any thing else. 2. Barley ; once ploughed, and, on dry lands, sometimes twice. This rotation is less frequent, now that barley-land is generally laid down with grass-seeds. 3. Wheat. 4. Beans or pease. 5. Summer-fallow. Neither of these three last successions are frequent, as they are only practised when the season is unfavourable to the sowing of other grain. For the same reason, they are also sometimes sown on land that has been in wheat, ploughed down. 6. After turnip, being preferred to wheat or barley ; and the returns generally justify the practice.

2. *Sort*.—The species are, 1. *Fawns*. 2. *Blainflie**.—These two kinds are nearly similar, are the most adapted both to the soil and climate, meal well, and although rather late in ripening, are not so backward as a third kind, *Halkerton*,

* From the lands of Fawns and of Blainflie in Lauderdale.

kerton, or Angus oats *. These are emphatically called *dour seed*; (i. e. *late-feed*, in distinction from the others, which are called *ear-feed*, or *early-feed*,) a weighty kind, giving on rich lands a great increase, though they are too late for a cold situation. 4. Red oats, lately introduced †, seem to be best adapted of any to an inclement country; for they are not only ripe two or three weeks sooner than any of the preceding, but they are not apt to be shed or shaken with the wind, as the grain has an uncommon adhesion to the straw: they meal well, and the meal is good; but the straw is not esteemed so much for cattle; and it is thought that this species exhausts the soil more than the former kinds ‡. There are several

* What commonly goes by the name of Angus Oats differ from the Halkerton oats, which is a large oat, and produces a tall coarse straw; the other is a neat plump grain, and produces a finer straw, not so apt to lodge as the Blainlie, and about a week longer in ripening. T. S.

† The introduction of red oats into this and the neighbouring counties, took its origin from the present Lord Chief Baron's father, Mr Montgomery of Magbeehill in Peebles-shire. Early in the beginning of this century, that gentleman, who was of an acute observation, and a useful experimental farmer, discovered, and brought this species of oats from Ayrshire. The benefit arising from the culture of it to his own estate, which is high in point of situation, and rather of an uncomfortable climate, induced him and the Chief Baron to be particularly careful in the cultivation of this grain, and preserving it unmixed with any other sort. At first, the quantity sowed for sale was very limited, but it soon became considerable, and now the experience of their utility has rendered their cultivation general over most part of the country. It appears singular, that no mention should be made of this oat by Colonel Fullerton in his Agricultural State of Ayrshire, from which it may be inferred, that it is not now known in that county. It seems to be a mistake, that it exhausts the ground more than other oats. Anon.

‡ Red oats, or, as they were called formerly, Barley-corn, was sown in this county from Tweeddale, about 40 years ago, where they had been in use to be sown by Mr Montgomery of Magbeehill, and then were called Magbeehill Oats by some. A species of the Peebles pea, much cultivated by that gentleman, also got the name of his place, and are at this day known by it to many. Twenty-four, or twenty-five years ago, Mess. Grays at Herperig, and Cairns, sowed few else but these kinds of oats, and were then considered by them a great acquisition for that high part of the county, their crop being all got in before their neighbours began to cut; but in three or four years

several species of early oats *, as Friezeland, Poland, &c. of which the distinguishing qualities are, that they ripen soon, easily shed, thrive only on a very rich soil, generally meal ill, but sometimes give a great increase. Black oats are also cultivated; but seem here to have no superiority over the white kinds, to compensate for the discolour in the meal, which part of the husk, unavoidably left among it, occasions. Change of seed is understood to be of much benefit to this as well as to other grain; and seed is accordingly renewed every third or fourth year. Even changing from one farm to another is found to be of service †.

3. *Steeping*.—Not in use.

4. *Seed*.—From four to six firlots an acre.

5. *Time of sowing*.—Oats are sown from the first of February to the middle of April.

6. *Culture*

years after, they, and all the people in that quarter, gave them entirely up, being found more apt to shake than the Blainlie, and producing a great deal less fodder, and not so good; an article, in their situation, that could not be dispensed with. I sowed them in a high farm about the same time, and gave them up ‡, for the same cause, except where the ground was very rich.

I still consider them, and what is called Church's oats, to be the best kinds of early oats. Church's oats, a species of the Frieseland, selected and cultivated by Mr Church near Kelso, was first sown in this county about 12 or 14 years ago: the grain is plump, and shed and meal well; they produce more straw than the other, and stiffer in the stem, less liable to lodge, and, of course, more favourable for sowing in grass seeds with:

* As to early oats, they have little fodder, and make bad feeding, also very easily shaken: but red oats are equally early, the fodder good, and not so apt to shake, as even common oats, and though small in the grain, they turn well out to meal. Upon comparing them with the earlier kind, that has been sown for a considerable time about Carnwath, I can see no difference.

J. F.

† If proper attention is paid to this, a good kind of oats may be kept from degenerating for any length of time, where the soil and climate is moderate. But where the ground is bleak, and the corn subject to be late, it is of great importance to bring the seed from the earliest and warmest soils.

T. S.

‡ After all that is said, the Red oats ought not to be given up.

G. R.

6. *Culture whilst growing*.—Hand wed, or the weeds cut with weed-hooks in the fore part of summer. No other culture given.

7. *Harvest*.—Cut with the sickle, and stooked like barley, in 12 sheaves to the stook; are more easily cut and handled every way, than either wheat or barley, and not so apt to heat in the stack as the latter.

8. *Threshing*.—The same as with wheat or barley. Rather cheaper done than otherwise.

9. *Produce*.—This very unequal: in many cases 15 or 16 bolls an acre; 10 are very frequent; but as a great proportion is raised on lands exhausted so as not to be able to carry any other grain, the produce is often less than 4. There may be from 15,000 to 20,000 acres sown in the county. Oats of ordinary quality weigh from 52 to 60 lb. the fir-
lot; some as high as 68. They are reckoned good that give in meal 15 pecks, and pay the multure, which is a peck of meal for the boll of oats. Some oats have given 18 pecks the boll, besides multure.

10. *Manufacture of Bread*.—Oats still afford, from the meal, a great part of the food of the people. The breakfast and supper are, with the generality of labourers, made of *pot-tage* of oat meal. Oat meal *cakes* are still to be met with in genteel families at dinner; but the common people have unhappily got such a predilection for wheaten bread, as rather to prefer it, notwithstanding of the excessive disproportion in the price.

BEANS AND PEASE.

These are generally cultivated together. There are probably not above 6000 acres sown in the county; in the upland districts very few; and there only pease, as beans will not come to maturity.

1. *Preparation*.—The chief intention of this crop is to meliorate the soil, and for that purpose it commonly succeeds

wheat

wheat or oats. The practice of drilling and horse-hoeing them is very general, in which case there are but a very few pease intermixed with the beans, and frequently none.

2. *Sort.*—Besides the common late feed beans and pease, there is a kind of early pea sown here (called *Hasting*, and sometimes *Peebles* pea) as late as the end of April, and is usually ready in harvest before the common kind, which is sown a month sooner: it is, however, uncertain in the produce; growing in some cases all to straw, and in others fails in the straw altogether. Very abundant returns are, however, sometimes got.

3. *Steeping.*—Not in use.

4. *Seed.*—The quantity of seed is from a boll to six fir-lots an acre.

5. *Time of sowing.*—Is from February 1st, to the end of March; when later, the crop is usually more luxuriant, but is more ready to be hurt, from being too late in harvest.

6. *Culture whilst growing.*—Broadcast beans and pease are sometimes harrowed when they are two or three weeks above ground, which has generally an excellent effect, not only destroying weeds, but imparting an invigorating principle to the crop itself. Drill beans are commonly hand-hoed once, and afterwards horse-hoed twice or thrice, as may be necessary.

7. *Harvest.*—Both the broadcast and drill crops are laid down loose from the sickle, where they remain eight or ten days (more or less as the weather may be,) to *win* before they are bound up. Beans are sometimes bound with straw ropes, and sometimes with ropes of pease, which are sown for that purpose among them.

8. *Threshing.*—In the same manner as the other grains. Pease are, however, very apt to be broke in the straw by the threshing mills; but bean-straw is the better for that circumstance.

9. *Produce.*

9. *Produce.*—The produce of drilled beans, in particular, is sometimes very great; 18 and even 20 bolls the acre have been known, but 10 bolls are not uncommon. In broadcast the grain seldom exceeds 10 bolls, generally much less; but the straw, which sells readily in the market, is often worth 5l. the acre; seldom less than 50s. It sells from 4s. to 8s. the kemple, of about 14 stone, Tron weight, (22 oz. per lib.)

10. *Manufacture of bread.*—The bread of pease, which is understood to be very nutritive, and is not unpleasant to the taste, was formerly used in every family, but of late has been almost wholly given up. The general application of this crop, particularly beans, is now to the feeding of horses.

P O T A T O E S.

Potatoes were first cultivated in the fields here, about the year 1744; they had not been long introduced, even into gardens, before that time. They are now in every farm; but few are raised for sale above six miles from Edinburgh, or other towns; the expence attending their carriage being too great to admit of bringing them from a farther distance. There may be from 1200 to 1500 acres cultivated.

Preparation.—The ground is previously well pulverized by frequent tillage; and it is always the driest soil that is chosen, without regard to the preceding crop. The mode of culture is uniformly in drills, from 18 inches to 4 feet distant from one another, and from 9 inches to 12, plant from plant, in the row. The dung is, in some cases, spread over the whole field; in others, it is confined to the rows: and sometimes is applied to the preceding crop, which is thought to make the best eating potatoes, although rather less in quantity.

Sort.—Seed is sometimes raised from the apple, which requires two years to accomplish; the first producing them only as large as nuts: but they are found more prolifick, and

generally of many kinds from the same apple. The *kidney* potato is esteemed the best; but requires the richest soil; and in that case is more prolific than any other, whereas on poor land it will hardly grow at all. The disease of *curling* has been remarked here for several years; but there is no other preventative known but that of changing the seed, by getting it from the neighbouring counties where that distemper has not yet made its appearance, and which is accordingly done almost every year.

Time of planting.—They are planted generally in April, and sometimes as late as the 1st of June. There are some early kinds that are ready for the market by the end of July; but it is commonly October before the latter sorts are taken up and housed.

Produce.—The produce, at an average, may be 30 bolls per acre, or from 36,000 to 45,000 in all, chiefly for the supply of the capital and the neighbouring towns, besides some imported at Leith from other places*. It is remarked, in general, that the earliest planted make the best or most *meally* potatoes; but they are more liable to be curled, and always less prolific. Those planted late are *watery*; but the crop is more abundant, and the curl seldom appears†.

TURNIPS.

The culture of this meliorating vegetable is still too little attended

* Thirty bolls per acre, of the present measure, is a great crop. I have attended to the raising of them for 50 years, upon land pretty much adapted to the purpose, and have but rarely found 30 bolls an acre at an average. T. S. I still think 30 bolls at an average the best-founded calculation. G. R.

† It having been suggested that potatoes taken up before they arrive at maturity, were not liable to produce the curl next season, experiments have been made to ascertain whether it is so or not, and the result has been in favour of that idea. This may, perhaps, be the reason why potatoes from the moorlands are less apt than others to produce the curl, for there they seldom come to maturity, the frost affecting the leaf too early in the season to admit of a natural fall. Repeated experiments will still be necessary to decide this question.

attended to, although the returns are very lucrative; besides the advantage arising from consuming them on the lands, and thereby producing an excellent fund of enriching manure, for the more abundant production of the other crops. It is probable, however, that the cultivation of turnip will soon become more and more extensive, particularly in the extremities of the county; where, owing to the greater distance from the market, it becomes an object with the husbandmen there, to have part of their farms in this, or other succulent crop, in order to fatten their cattle at home with the produce of their own lands; instead of selling them off half fed as formerly, so little either to their own credit, or to that of the country in general.

1. *Preparation.*—Though turnip may be forced to grow on heavy, or on damp soils, it is found impracticable in this moist climate to take them off such lands in winter; they are therefore cultivated only on dry soils, and generally as a substitute to summer-fallow. The ground receives commonly a furrow previous to the winter, and care is taken that it be well pulverised in the months of May and June, by frequent ploughings before the manure is laid on, which is generally at the last operation immediately before the seed is sown, which is usually in drills, from two feet to thirty inches asunder. In some cases the dung is laid in the drill below the seed, in others, it is spread equally over the whole field; in which case the land is sometimes laid quite flat, without being formed into drills, the seed being sown, however, in rows at the usual distance; a practice which seems to be judicious, from this, that the principal risk attending this crop is from the seed's not vegetating; a circumstance more apt to occur, when sown on the top of a drill exposed to the drought, than on a flat field, where of necessity there must be more moisture.

2. *Sort.*—Red, white, and green, sometimes separately, sometimes mixed. The red seems to be the hardiest, but the cattle, at first, have a greater aversion to it, perhaps from being more pungent to the taste.

3. *Steeping*

3. *Steeping*—Not in use.

4. *Seed*.—From 1½ lb. to 2 lb. per Scotch acre. Many expensive and complicated machines have been invented, to sow with; none appears better adapted to the purpose, than that simple implement recommended by Dr Anderson in the Aberdeen Report. It is like to a pepper-box, made of tin, and is placed on the end of a walking-stick, and costs 6d. A person can sow with it by shaking it over the drill, as fast as one can walk.

5. *Time of sowing*.—From the middle to the end of June; when more early, the turnips are apt to *shoot* before winter, when later, there is a risk that the seed does not vegetate, and the crop itself is less in bulk.

6. *Culture whilst growing*.—Hand-hoed once or twice, and horse-hoed as long as the rows do not prevent it by growing together, which generally happens by the beginning of September.

7. *Feeding, &c.*—They are sometimes fed off with sheep in flakes, on the field where they grow; sometimes carted off to an adjacent field and consumed there, which affords an excellent *tathing* to the field on which they are eat; sometimes one half only (ridge by ridge alternately) are led off, and the other half consumed on the field they grow on; which is adopted in cases where the land is supposed not to be sufficiently enriched with the manure previously bestowed; but where it would be too rich, were it to receive the whole tathing also. Twenty sheep are commonly fattened on an acre, worth from L. 6 to L. 10. according to markets at the time.

When the turnips are consumed by cattle, which till of late was the general system, they are always carted off the field to the cattle-sheds, where each nolt is confined to his stake, and fed regularly; allowing him also a small portion of hay, and taking care that he is well littered, a practice which is productive of much manure, the most favourable circumstance

cumstance in this mode, as in general the return is less in money from cattle than from sheep.

An excellent practice has lately been introduced here, of taking up the turnip crop in the month of December, if it can be done before the frost sets in, and cutting off the leaves, the turnips are piled up into long heaps, and covered with straw, and are found to keep well two or three months; the cattle eating them as keenly, and fattening on them nearly as much as if quite recent from the ground. Those who have had their turnip crop locked up (as it were) by the frost, or covered with the snow, during the very time in which there was the greatest need for it, besides the waste from rotteness occasioned by these causes, will see the advantage to be derived from taking them up before winter; which has this further to recommend it, that the ground being sooner cleared, will of course be more early ready for the succeeding crop.

The following very intelligent observations, (chiefly on this subject, though containing other matter) communicated by a Farmer in the neighbourhood of Edinburgh, will shew more minutely the comparative value of this crop, according to the different ways in which it may be disposed of.

“ S I R,

“ Agreeable to promise, is inclosed an account of feeding ewes with early lambs. The number in all was sixty, fed off in four weeks, the expence as under :

	<i>L.</i>	<i>s.</i>	<i>d.</i>
To 2 bolls of grains per day, at 2 s. per boll, 28 days,	5	12	0
To 2 pecks of oats, ditto, 1 s. per peck, ditto, -	2	16	0
To 3 stone of hay, ditto, 6 d. per stone, ditto, -	2	2	0
To 1-4th acre of turnip, - - - - -	1	10	0
	<i>L.</i>	12	0 0

“ Thus each lamb cost 4 s.

“ Feeding with turnip, oats, and hay, takes five weeks to feed off.

20 ewes

	<i>L. s. d.</i>
20 ewes will eat 1-half acre of turnip in 35 days,	3 0 0
ditto, a peck of oats daily, hence,	1 15 0
ditto, a stone of hay per day,	0 17 6
	L. 5 12 6

" This comes to 5 s. 7½ d. each lamb.

" Feeding on grafs takes six weeks to feed off. The average rent of good grafs may be L. 2 per acre, which will feed off four ewes with lambs. I consider six weeks from the middle of April, the usual time of laying on, to be full 1-half of the value of the grafs for that season; hence the lambs cost 5 s. each in that time.

Turnip sold to the Edinburgh cow-feeders, at an average, 20 square feet to a bunch, 9 bunches to a load, makes 288 load per acre, at 1 s. the load, L. 14 8 0

Deduct expence.

6 loads to a single cart.

48 loads in all, to Edinburgh, 4 miles,

at 2 s. as hire,	-	-	L. 4 16 0
48 tolls, at 3 d.	-	-	0 12 0
			5 8 0

An acre thus produces free, - - - L. 9 0 0

" Turnip-feeding sheep, by flakeing them on the field, 20 sheep eat an acre in 14 weeks. If they are led off to a grafs field, 10 score will tathe or dung an acre in seven days, worth 2 l. 10 s. hence the value of dung thus acquired from an acre of turnip, is 3 l. 10 s.

" As to feeding in the house, I find the dung worth the trouble of carting, and the value of the straw it takes for litter. I find the lambs fed on grains, not only sooner ready, but more white and firm in the flesh; the ewes are also in better condition. I likewise found, that, at times, to mix a little salt among the grains, was of great service; but it was necessary to avoid, above all things, giving them grains when
four

four, or old kept; and of importance also to feed them regularly, and to give them fresh clean litter every day.

Although selling turnips to Edinburgh turns out well, yet, from the trouble and risk attending it, I have given it up*.

I am, &c. J. F.

13th October 1795.

SECT. 5.—*Crops not commonly cultivated.*

RUTA-BAGA, OR SWEDISH TURNIP.

This was introduced lately, and thrives well. It is, perhaps, not so beneficial in some respects as the common turnip, but as it admits of being transplanted with advantage, it is surely an object of attention to the turnip farmers, as by means of it, they can fill up any vacancies in the drills of the common kind, with very little expence, which is hardly practicable by any other means. Even where the turnip fails altogether, as by the fly or flugs, the crop can be more readily renewed from a seed bed of ruta-baga, than from re-sowing the field, which seldom comes to much good.

The following communication, procured by favour of the Hon. BARON COCKBURN, sets the Swedish turnip in a still more favourable light:—

“ This plant is the best calculated of any for a Northern
P climate;

* It should also be added, to this Gentleman's account, that the lambs were sold that year, to which his report refers, at 14 s. in the first and second weeks of March; but, had they been three weeks more early, they would have brought 21 s.

He tried the experiment of crossing with the Hereford, and found, that the lambs come much earlier the first year than the second, and the third year even later than the ewes bred on the sheltered parts of the Pentlands. At Blackford, in the vicinity of Edinburgh, the ewes lamb regularly in January, owing to the milder climate, and from the ewes not being milked after the lambs are taken from them, as was formerly the case on these lands. The practice of milking ewes, indeed, is now become justly exploded in the greater part of this county.

climate ; it stands frost well, keeps wonderfully when headed with straw built in stooks, which becomes in a great measure necessary, as hares resort to it from all quarters, and will touch no other root, while any of it remains. It eats as well after it is shot and sheds its feed, as it does before. I saw the remainder of a stack of it, the end of last May, at the Duke of Buccleugh's farm, which, with several others, had been lifted and stacked the first week of November at Dalkeith, after the winterers had been turned to grass; one root of which I carried home, and found it, when boiled, eat as well as it would have done in the month of October.

“ Cattle are much fonder of them than turnip, insomuch that when put into a straw-yard together, the turnips are never touched until the other is entirely eaten up. Nay, after having been accustomed for some time to the Swedish plant, they have been found to refuse turnip for many hours; and even when compelled by hunger, to take to them with a seeming reluctance: the superior nutritious quality of the plant is pretty well ascertained from this fact; that, upon a comparative trial of a number of square inches of a single root, against the same of field turnip, the weight was a third more; and that cattle fed upon it, put up at the same time with others upon turnips, advanced more in a month than the others did in six weeks. Upon land prepared for turnips, the proper season for sowing it is about the 10th of May, and not much later. It has been tried in February, when early garden turnips are sown, but it always failed, growing to the stalk only without any root; when sown after May, it seldom ripened to any tolerable size. Hares don't much take to it until the end of October, when the frost commonly begins, but as it can then be stacked, this objection is removed; and likewise the trouble attending the supply of cattle, during a storm with turnips, which will not suffer to be kept long after being taken out of the ground. The shaws of this plant, when carefully stript, are found to be an excellent kitchen green, and a good substitute for spinnage.”

In addition to the above, the following circumstances relating

lating to this turnip, communicated by a Gentleman, whose accuracy may be depended on, are deserving of attention :—

“ For five years I have found the Swedish turnip very useful, although less productive than the common Norwich kind; half the quantity will go nearly as far, and nothing will destroy it in winter. As a specimen of its hardiness, I shall mention one fact:—Last winter, which was a severe one, my sheep got into a field, where both species were growing. The smallest bite on the common turnip caused them to rot completely, and although many of the Swedish turnip were half devoured, the remaining pieces continued perfectly fresh and sweet, till the sowing of my barley obliged me to carry them off for my sheep.”

Gogar, 12th Nov. 1795.

W. R.

CABBAGES.

In the low parts of the county these are cultivated with success, so far as depends on the raising of the crop; but it does not yet appear that they are equally adapted to the feeding of cattle here as turnip; and, of course, the cultivation is extremely limited, there being hardly any other channel in which they can be disposed of, the demand for them in Edinburgh not being so extensive as to stimulate their culture in the fields. The following detail of the process of cultivating them, &c. is taken from the communications of a Gentleman in the neighbourhood of Edinburgh, who has been in use to grow this crop for some years past.

Preparation.—The ground ploughed in November, and again in April following, well reduced by harrowing, &c. laid out in 3 feet drills; 30 carts of dung per acre laid in the drills, which are then split with the plough covering the dung, and then rolled lengthways, after which the plants are put in.

Number of plants per acre.—Seven thousand two hundred (long hundreds) per Scotch acre, at two feet distance in the rows.

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Time of sowing and planting.—The seed is sown, in garden ground, about the 1st of September, and transplanted to the field in May, or the 1st of June, thereafter.

Culture whilst growing.—First of all, the earth is taken away from the plants by the plough, they are then hand-hoed; in a few days the earth is again laid to the plants with the plough, and afterwards hand-wed, if any weeds appear.

When used.—The crop is ready for use by the end of October, and continues all the winter, till the end of March or middle of April.

Weight per acre.—Not ascertained.

Application.—Feeding of milch cows, and sometimes ewes and lambs, but always found turnip more adapted to ewes than cabbage.

OPEN KAIL, (COLEWORTS.)

These are universally cultivated, even in gardens; in every cottager's *kail-yard*; and have been known to thrive on the same spot for ages; owing perhaps to their perpetual verdure, so enriching to the soil. In the fields they flourish most luxuriantly, (but are very little cultivated there,) far surpassing cabbages, requiring much less manure, and almost no attention. They are exceedingly less liable to be hurt by frost than the former, while cattle eat them with great avidity. There indeed appears to be no vegetable more congenial to the soil and climate than this; and the time is perhaps not far distant, when it will be cultivated to great extent.

MANGEL-WURZEL.

Mangel-wurzel, or root of scarcity, so much vaunted of late, has now altogether gone into disuse, being found unprofitable; although it grew luxuriantly, and with very little culture.

CARROT.

C A R R O T.

Carrot, when cattle feeding becomes as much an object with the husbandmen here as it ought to be, will be esteemed a very valuable root, and much cultivated. The fact is established that it thrives, and that heavy crops of it can be obtained. The sale for it in the Edinburgh market is too limited, to encourage an extensive cultivation.

P A R S N I P.

Parfnip is in a still worse state, there being almost no sale for it at all. It however grows well.

F L A X.

Flax prospers in many places, but is not extensively cultivated, for want of proper hands to prepare and dress it for the manufacturer.

H E M P.

Hemp is raised in still less quantity, there hardly being a single person that pretends to manage it. Sometimes, however, it is propagated out of curiosity, and from every specimen that has appeared, there is not a doubt of it succeeding as a crop. Were the mode of preparing it understood here, it would prove a valuable acquisition to the husbandman. But this, as well as the management of flax, should be a profession by itself; leaving to the farmers merely the cultivation of the soil, and improvement of the plant.

Y A M S,

A coarse kind of potato, give the greatest produce of any, particularly the red, of which 12 tons an acre is a common return. They are chiefly for milch-cows, increasing the produce without affecting the quality or taste of the milk. They grow on poor soil, even more abundantly than on rich, (where they are apt to run too much to stem, and be less productive at the root,) and from the constant verdure which
they

they retain to the latest period of the season, they enrich the ground little less than a crop of turnip itself *. The white yam is a finer species, but a less luxuriant crop. It is sometimes imposed on the public for a large kidney potato, to which it has a resemblance in colour and shape, but is the very reverse in point of quality. Both these species, lately introduced, are treated in the cultivation like potatoes, and similar to them, are also excellent preparations for a wheat crop.

R Y E.

There are perhaps not 50 acres cultivated in the whole county. It is generally disliked in bread; and, till of late, that the distillers take it at a low price, there was no other market. It is said to be so much the aversion of poultry, that they even avoid the place where it grows; it is therefore sometimes sown in head-ridges around the farm-houses and yards, as a protection to the other grain. As the thatch is excellent which is made of the straw, and the grain, in general,

* An experiment lately made on red yams, to determine how far they are adapted to the making of starch, has turned out so successfully, as should render the cultivation of that root, for the future, a great object in agriculture. It appears from this experiment, that from 40 lb. weight of yams, 3 lb. weight of dried starch can be obtained, and as an acre may be supposed at an average to produce 10 ton weight (50 bolls,) thus 15 cwt. of starch may be made from an acre. A boll of ordinary wheat is understood to produce about 80 lbs. weight of starch, and from 8 bolls, (a produce similar in return to 50 bolls of yams,) per acre, there can thus be obtained only 640 lb.; of course, one acre in yams will give more starch than $2\frac{1}{2}$ acres in wheat, whilst the yam itself is cultivated at much less expence, and is, besides, one of the best preparations for a crop of wheat in succession of any.

The process of making this starch is very simple, and cannot be expensive. The yams are first grated down, and then the whole mass is successively put through sieves of a lesser and lesser wire, and at last is filtered through a cloth, which permits nothing to pass but the finer farinaceous parts of the vegetable; it is next *bleached* by repeated washings with pure water, till in the end no more discolour on the water appears. The whole of this can be accomplished in the course of a single day; the starch being then fit for immediate use, although it is necessary that it be completely dried before it be packed up for preservation; a process that would indeed be tedious without an application to the oven, in the same manner as is done in the making of starch from wheat.

neral, very abundant on rich light lands (where wheat would be liable to lodge and come to nothing,) it may be cultivated, even here, with propriety, although it should sell at a low rate.

T A R E S.

Tares, as green food for horses, are cultivated on a small scale on several farms, the intention being merely to preserve a succession of succulent food between the first and second cuttings of the clover, in case the last should be retarded, or fail, as sometimes happens in a dry season. A winter species of these, sown in autumn, and ready to cut before the clover, is in a few instances propagated. Should it answer this intention, there can be no doubt that it will soon become a general practice*.

B U C K - W H E A T,

Has been tried in different situations in this county, and, although not yet cultivated to great extent, the result has been so far satisfactory, that it is clearly ascertained to be adapted to the climate, and even to prosper on soil of an indifferent quality. The following account of its cultivation, on an ungenial plot of ground at Barnton, in the neighbourhood of Edinburgh, was obligingly communicated by Mrs Ramfay, who desired the overseer on the lands to draw it up for the Mid-Lothian Report, and must prove a valuable addition to this account.

“ *Nature*

* I have, for some years, tried Tares and Rye sown together in autumn, for spring food to my horses; they have generally succeeded well, but last winter being very severe, destroyed them sown with our common tare; but some I had from England, as winter tares, stood all the severity of the season, and were a most luxuriant crop, though, as it was late in the year before I could get them to sow, (the middle of November,) they were not fit for cutting properly till nigh the end of May. The spring before, I had them most luxuriant by the 3d of May for all my horses. W. T.

" *Nature of the soil.*—Poor and light, intermixed with gravel, and lying in an uncultivated state:

" *Culture.*—The beginning of November 1793, the ridges, which were high, broad, and uneven, were *cloven* down, and allowed to remain in that state till the beginning of March 1794, when the land was again ploughed in a contrary direction to the first; from this time till the beginning of May it was twice ploughed, and twice harrowed, (gathering the weeds at every ploughing;) at the last ploughing, the land was made up into nine feet ridges, having got thus four furrows in all.

" *Time of sowing.*—The 5th of May, sowed broadcast, and harrowed in the same manner that is commonly done with barley, &c.

" *Seed.*—Upon a Scotch acre, 3 bushels:

" *Culture whilst growing, &c.*—The land received no culture during the growth of the crop. Five or six days after sowing, the plants made their appearance, and rapidly advanced till the 25th of September, when it was cut down; but, owing to some heavy rain, which fell about that time, could not be secured till the 12th of October, when it was finally carried into the barnyard, where it remained till the 16th of November 1795, when it was threshed out, and produced at the rate of $10 \frac{1}{2}$ bolls per acre; (measured with the wheat firlo.)

" No direct answer, at present, can be given to Mr ROBERTSON'S inquiry, respecting "*its application and supposed value,*" as the whole is still on hand; but if it be allowed that 10 bolls of buck-wheat will feed as many hogs or poultry as 8 bolls of oats, the profit resulting from the cultivation of this plant must be very great.

" It may be said, with a great degree of certainty, that no other crop, with the same cultivation, and upon the same soil, could have produced so great an increase.

" There

“ There seems to be some difficulty in ascertaining the best time for cutting of buck-wheat ; as, like other leguminous plants, seed and flowers appear at the same time on different parts of it. The most proper time appears to be, when the greatest quantity of seeds are ripe at the same time.

“ The experiment, whether oats or buck-wheat feeds best and soonest, is meant to be tried on the hogs in the course of this winter, and the result may appear in some future publication.”

Barnton, 21 November 1795.

T O B A C C O

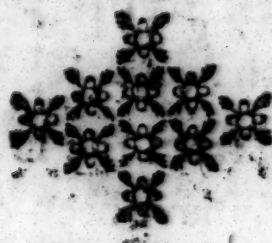
Was cultivated in different parts of this county about 15 years ago ; but, in consequence of an Act of Parliament prohibiting the culture, it was of course given up. It was propagated with ease ; grew luxuriantly ; and seemed, indeed, to be congenial with both the climate and the soil, and from the mode of culture, (in drills, hand-hoed and horse-hoed,) had the appearance of being as good a preparative for a crop of wheat as any crop known in this country. There seemed to be one objection alone, to the cultivation of this foliaceous, meliorating plant, that the leaves (the object of culture) were dried with difficulty, owing to the general moistness which prevails in the season of the year (September,) in which they were picked ; but which, from the inventive and enterprising spirit of our people, might have been obviated had it been left to its natural course.

R H U B A R B.

This has been long cultivated in our gardens ; seems quite adapted to the soil and climate ; requires about five years to arrive at perfection, when it yields about 24 lb. of crude root, which dries down to 3 or 3½ lb. and has then every medicinal quality with Siberian Rhubarb, but not quite so powerful ; yet is, perhaps, of all plants yet cultivated, the most lucrative, at the present price at which it sells in the laboratories ; and in which, it should seem, that the demand is far
Q beyond

beyond the present produce, so as to occasion a very extensive annual import. As an ornamental plant, it is hardly equalled; and in rapidity of growth when in the flower, is unrivalled by any known in this country.

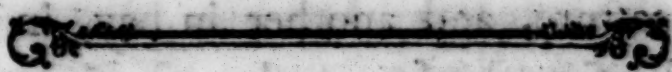
Anise, Caraway, Millet, Woad, Weld, &c. have all been cultivated in this county. The soil, indeed, as well as the climate, with all the imperfections we are apt to ascribe to them, seem congenial to the growth of many more plants than are yet called, by the demands of the country, into cultivation.



OF MID-LOTHIAN,

CHAPTER VIII.

G R A S S.



SECT. I.—*Natural Meadows and Pastures.*

THE great object of the husbandmen in this county being the cultivation of grain, there remains little land, permanently, in grass, that is adapted to tillage. Exclusive of the hills, which may be equal to 1-3d of the county; and of the heaths, or wastes, in the moorland districts, which may amount to 35,000 acres; it is probable that there are not above 15,000 acres in pasture in all the rest of Mid-Lothian; and even the greater part of this is not natural, but raised artificially from seeds; the lands reverting, in rotation, after a short interval into tillage, from an idea, which appears to be well-founded, that the crops of grain, as well as the pasture itself, are produced in greater perfection from such management. Much of this pasture is consumed by stock pertaining to the Edinburgh butchers, which they are continually changing, and of course are rather preserved than fed upon it: a good proportion of it is in the hands of the different proprietors around their country seats, for the purpose of grazing a few milchcows, or for feeding of sheep, for the use of their families; and a small proportion is in the occupation of the tenant's, for the same purpose. In the vicinity of the town, a few parks are allotted to the grazing of cattle by the night, and which, from this convenient mode of accommodation, yield a very lucrative return; from 8d. to 1s. being paid for the grazing of a horse; and from 7d. to 10d. for a milch cow. At a greater distance, there are some inclosures for the reception of cattle by the season, where horses are taken in for sixteen weeks in summer, at from two guineas to 2l. 15s.; an ox, from 30s. to 40s. and the other cattle in the like proportion.

Natural hay is still less abundant. Perhaps in the moorlands there may be from 4000 to 5000 acres, generally on swampy ground, interspersed through the different farms, which produce but a very coarse kind of hay, applied to the support of the young stock during the winter. In the low country, there is still less, grown commonly on lands that are one year in pasture, and another in hay, in rotation, as a means of eradicating the fog, and preventing the increase, by the seed of the stronger kind of weeds. Thus, less than 1-5th of the arable lands is applied to meadows and pastures, and even a considerable proportion of that is brought, from time to time, under the cultivation of the plough.

SECT. 2.—*Artificial Grasses.*

The chief of these, red clover, although known here above 60 years, has not been very generally cultivated above 35. There has, however, been no plant introduced into this country so beneficial, whether considered with regard to its value as a grass, or to its fertilizing effect upon the soil. When first introduced, its cultivation was limited, and scarcely supplied the home consumption on the farm; but it was gradually afterwards extended, along with *rye grass*, in the view of raising hay for the Edinburgh market, and has now for several years occupied more land in the low part of the county than any other species of crop whatever. There are perhaps 10,000 acres under sown grass within 7 miles of town, and probably as many in the more remote parts of the county.

Red clover is mixed with rye grass, on account of the hay, which it is supposed would be too coarse if it consisted wholly of the former. It is commonly sown among barley in May, sometimes also among wheat and oats in April, and at times by itself on summer fallow in July, coming in as a crop the following year. In all cases, care is taken to have the ground well pulverized, the stones carried off, and the whole finished neatly with the roller. There is sown from one to two bushels of rye-grass seed, and from 12 to 24 lb. of clover, to an

an acre, in proportion to the nature of the soil, the lightest requiring least seed.

In the vicinity of Edinburgh, and other towns, a considerable proportion of this crop is consumed green, fetching from 6l. to 9l. an acre, both cuttings. There is every where a part of it used in that way by the farm cattle, but much the greatest proportion is converted into hay *.

Yellow clover is sometimes mixed with red, and never fails to prosper; but horses are not fond of it: and giving no second crop †, the cultivation is not so extensive as that of the other. White clover is always sown for pasture, and thrives well. It is indeed so natural to the soil, that some people are hence induced to sow it thin, trusting that it will in time become abundant. It seems, however, to be much better husbandry, to insure at first a liberal quantity, by sowing it thick: the saving of seed is a mere trifle, compared with the deficiency in the produce of even a single season.

Lucerne has also been tried, but on so small a scale as not to merit a description.

SECT. 3.—*Hay-harvest.*

Hay-making is performed here on the simple principle of giving

* The price varies much in different seasons; being some years at 3d. and in others at 1s. the stone (22 lb.) according to the crop in the neighbourhood, on which it entirely depends, without being at all affected by foreign demands. In the distant parts of the county it is common to thrash the hay for the rye-grass seed, which sells here from 1s. 6d. to 3s. 6d. a bushel. About 20 are got from an acre. The hay in this case sells commonly at 1d. the stone cheaper; being particularly disliked by stable-keepers and grooms, who rather wish to save the seed themselves, for the purpose of sowing it.

† Even red clover seldom now produces a second crop, though at first it was not uncommon to cut it thrice in a season, and it always stood two years at the least; but of late it fails in this last respect also; probably owing to the frequent repeating it on the same land; for it may be remarked, that it still grows more luxuriantly on land to which it is new, than on that to which it has been long accustomed.

giving it no more work than just suffices to *win* it, in order to preserve, as much as possible, the natural juices and flavour. The process differs, as the hay is either from seeds, or natural, according to the circumstances of these different cases.

When hay from seeds, such as clover and rye-grass, is cut down, there are two things respecting it to be remarked: 1. The *swath* is laid in pretty regular order, in form somewhat like to the blade of a razor, in which the ears incline to the *edge*, while the bottoms are piled up one above another, in the opposite direction at the *back*. 2. The stalks, individually, are firm and straight, and like to reeds; naturally unfusceptible of moisture, but very readily admitting a passage through them to the air, or the wind, as it blows over the field. In consequence of these two circumstances, hay, in this situation, is not difficult to be *win* or *made*; for in dry weather, the air readily penetrates through it, and dries it quickly; and in wet weather, it is not apt to imbibe the rain, but rather sheds it off along its upper side of stalks, and of course can stand a considerable deal of rain without receiving much damage, and very readily becomes again dry on the return of fair weather; a fact well confirmed by experience; while, at the same time, its aromatick flavour, as well as natural colour, is very little exhausted or altered, as there is but a small proportion of its bulk exposed to the weather, the greater part remaining sheltered as under a shade, and dries by degrees. But should the hay-makers, in the view of accelerating the process, *turn* it in the *swath*, the following circumstances will occur: 1. The *swath*, instead of presenting a regular inclined surface, naturally adapted to lead the rain off as it falls, will lie expanded, loose, and irregular; well adapted indeed to receive the influence of the winds, or of the rays of the sun in dry weather, but equally ready to catch rain in case of a shower. 2. The hay itself will have become so much bruised, or softened, in the operation, as to retain, and even imbibe, that moisture which in the former case it would have repelled or shed off. The consequence must be, (as it is known to be in fact,) that hay, in this situa-

tion,

tion, if once it gets wet, is much more difficult to be got dry again, than if it had not been turned at all.

There are, however, cases which frequently occur, in which it is proper to turn hay. Thus, if it has received rain, or has been protracted in the making, by a long continuance of damp weather, it must be turned in the swath at all hazards; and in most cases it will be proper to turn it in the forenoon of the same day in which it is meant to be put into large ricks in the afternoon; but in general, the process cannot be greatly advanced by that operation in good weather; and as it really retards it if followed by wet, the best way is to let it alone till it is finally to be made, which in dry weather will be in about three days after it is cut, when it may be put into ricks of from 40 to 80 stone weight, where it may remain ten or twelve days longer, by which time it will be fit to be put into *fows*, or *stacks*, of any dimension. (*See the view of the farm-yard.*) There is, however, one fact to be admitted, that in this mode of hay-making the upper side of the swath, (exposed perhaps for three days together to the weather,) may be *too much* win, while the under side, for want of exposure, may be *too little*. There is, however, another fact, equally well ascertained, that by the time the hay is in the rick for 24 hours, the whole becomes one homogeneous mass of the same degree of temperament; that which was too dry imbibing the superfluous moisture of that which was scarce dry enough, so that no distinction can afterwards be observed. The expence of making hay of this description amounts from 1 s. to 1 s. 6 d. the acre, according as the crop may be from 150 to 300 stone weight, supposing the weather to be favourable. In wet weather, one cannot calculate what the expence may be, nor the time that will be required.

In making of *natural*, or meadow hay, other circumstances take place, which make a different, and more expensive mode of operation necessary. In this case the swath is far from being laid down in a regular form, while the hay itself is neither firm nor straight; but, on the contrary, very soft and much interwarpt together, and generally so thick at the bottom, that, when turned up by the scythe, it lies so compact
and

and close, as totally to exclude the external air; therefore it becomes necessary, not merely to *turn* this kind of hay from time to time, but to *ted* it very minutely, spreading it like a blanket, as evenly as possible, over the whole surface of the ground, so that no part of it may be much excluded from the influence of the drying winds, or rays of the sun. In this way, when the weather is good, natural hay may be made, in the course of a week, ready to be put into cocks of 20 or 25 stone weight, where it ought to remain, well tied down, and neatly dressed in the sides and at the bottom, for eight days more; when it may safely be collected into larger ricks, and finally into *sows* of greater dimension. In wet weather, this process is no doubt protracted to a longer period; but still it will be found, that to spread it as thinly over the field as the ground will admit of, will be the surest way to preserve it from material injury; for although, in this case, it is exposed to every shower that falls, yet as it is not any where of much thickness, the water is not retained, but sinks thro' it, to the ground; and on the return of the first breeze, in a few hours the upper parts will be dry, and if then turned, the under side, in like manner, will receive the same benefit.

A much more complex mode of hay-making was formerly in use in this county, but is now pretty generally exploded, on account of the objections to which it is liable. This consisted (with hay of all descriptions) in spreading it out immediately after the scythe, in the fore part of the day, and putting it into cocks before night, which were increased in size from day to day, in proportion as the hay had advanced in making, till in the end it became fit for the sow, or larger stack. In fair weather, there can be no question, that with this perpetual bustle, which was mistaken for exertion, the hay might be made in not much longer time, tho' with much greater expence, and perhaps be little inferior in quality, than it can be in the simple mode first mentioned. Yet, in wet weather, the point most to be guarded against, in every one circumstance above stated, it was miserably defective. The hay from the repeated teasing it was subjected to, was not only deprived of its natural juices and flavour, but from the

soft

soft bruised state to which it was reduced, it became quite unfit to repel moisture, but, on the contrary, imbibed it like a sponge. It is indeed true, that hay in cock receives less of the rain that falls, than hay that is spread over the whole surface of the ground; yet it is equally true, that hardly a single drop which falls on such hay as this is exhaled naturally, neither can it penetrate through it to the ground; but in the worst manner that can happen, it sinks down into the heart of the heap, where it occasions fermentation and rottenness, unless speedily relieved, by being again shaken out, in whatever state the weather may be.

Indeed to this alternative are hay-makers, on this system, frequently reduced, more particularly, if in their endeavours to guard against a shower, and taken at unawares, they have re-cocked their hay after the rain has begun to fall; a mistake, from their ill-grounded apprehensions of danger from exposure, they are very ready to commit. In fact, this whole system, from beginning to end, is, of all others, the most tedious, the most expensive, and the most hazardous; superfluous labour at the best, in fair weather, and injurious in no small degree in times of rain, which in many hay-making seasons is but too prevalent in this country.

Hay is seldom hurt here by *beating*; and as to its *taking fire*, from that circumstance, it is unknown in this county. The only instance that I have heard of in the neighbourhood, happened at a Distillery, in an adjoining county, near the border of this, where a low of hay, of 20,000 stone weight, (about 200 tons) was conjectured to be in the way of taking fire; upon which, all hands were ordered out to take it down and spread it out, when some of it, as it was carrying away, was actually seen to *burst into flame*! a circumstance, that many people here will not credit, so very little are we accustomed to such an unaccountable fact. Several such accounts have, however, been stated in newspapers as happening in England; where, if it is the practice to make their hay in the manner last mentioned, (as seems to be in some counties the case,) the one circumstance will account for the other, as hard-

ly a plan of hay-making could be devised more ready than it to engender such a phenomenon.

SECT. 4.—Feeding.

From the very great variety in the quality of the different pastures, and even from the greater or less attention bestowed by the occupiers of the grounds, to the selection of the stock best adapted to the respective situations, any conjecture as to the proportion of cattle they may maintain must be very uncertain.

The example given, (in the Appendix No. 6.) of Mr JOHNSTON of Hillhouse drawing about L. 150. from less than 20 Scotch acres, maintaining about 20 milch cows, is perhaps among the best instances of feeding that this county, or any other in the Island, can afford.

On the Pentland and Morefoot hills, one sheep to the acre (Scotch) may perhaps be reckoned as the highest proportion; but as several of these cannot maintain to that extent, the medium will probably be at the rate of two sheep to three acres. In some of the heathy tracts in the moorlands, it will require a greater proportion, as these are still more ungenial than the hills themselves. In the most fertile pastures in the low country, 4 ewes and lamb to the acre are held to be sufficient; which, with the early sale of the lambs, and the sale after harvest, of the ewes then fattened, may produce (excluding accidents,) from 40s. to 50s. the acre. Stocking such pastures with wedders, at the rate also of four to the acre, and selling them off, when fat, which may be repeated once or sometimes twice in a season, is supposed to be still more profitable; but all depends on the skill of the purchaser at the first market, or on the supposed value of the sheep when laid on the grounds, as to the profit that may arise.

In the inclosures let out for the grazing of cattle by the season, one beast to the acre, at an average of horses, colts, cows, queys and year-olds, may be estimated as the proportion; but in those into which cattle are taken by the night it is more, even of full-sized cattle, particularly in the com-
mence-

mencement of the season, (usually about the end of May;) but it is to be observed, that this pasture, close in the vicinity of the town, is richer in quality than at a greater distance; and also, that although this high rate of *stocking* redounds to the profit of the owners of the grounds, it is different with the owners of the cattle, who pay for the convenience, as well as for the intrinsic worth of the pasture.

It is supposed, by many, that more profit arises from feeding cattle of different kinds in the same inclosure, than if they were all of one species; which seems to be probable, from this, that one kind chuses what another rejects, and thus, more vegetables are converted into animal substance.

Shifting cattle in rotation, from one inclosure to another, at due intervals through the season, is supposed, also, to have a good tendency; as a change of the pasture gives them a greater relish for their food, and thus induces a greater quantity of aliment to be consumed, and of course shortens the process of fattening; a circumstance that is always desirable in grazing. Even the quantity of herbage is from this cause increased; for fields on which the grazing is from time to time suspended, must produce a greater proportion of vegetables, from the well-known quality, inherent in green crops, of drawing nourishment from the atmosphere, but which cannot be imbibed by a bare eaten pasture, from the want of foilage to attract it. Therefore, leaving pasture in this state for two or three weeks to recruit, will have a most beneficial effect, producing more food at once by the end of that time, than could possibly have arisen had it been continually eaten down as it sprung up. Thus, if an inclosure of 24 acres were to maintain 24 beasts; subdivide it into three of equal size, and let the cattle be shifted weekly, from one to another regularly, it may, perhaps, maintain 27 as well.

CHAPTER IX.

GARDENS *and* ORCHARDS.

Garden Stuffs. **E**DINBURGH is at all times well supplied with culinary vegetables, in great variety, according to the different seasons of the year, and generally on very moderate terms. The ground employed in *sale gardens* for raising these, is, however, not very extensive, hardly exceeding 500 Scotch acres, chiefly situated in the vicinity of the town. It is, for the most part, possessed in small parcels, by an ingenious and industrious race of gardeners, each in the midst of his own plot, of from two to six acres, to the cultivation of which his whole attention is paid, unconnected with any other profession whatever.

In the management of these gardens, as in farming, it is found of much importance to have a change of crop in succession; for although, by the liberal application of manure, the same kind of plants may be forced to grow for a series of years on the same land, yet it is found more beneficial to intersperse in rotation, crops of different qualities, in order that each may be produced in greater luxuriance and perfection.

There is, however, no regular course followed out: the greater diversity of vegetables cultivated, renders it less necessary than in husbandry; and as there are also different crops, in some cases, raised on the same land in a season, a similar production may, with propriety, be repeated much sooner in rotation, than it could on lands under the cultivation of grain. There are also many productions of a garden, to which a proper rotation is not so much studied, as the appropriating of the particular herbs to their peculiar soil*.

Fruits.

* The original introduction of many of our most valuable garden stuffs, can be

Fruits.—Of the smaller fruits, currants, gooseberries, &c. there is an excellent and very diffuse assortment cultivated, not only in the sale gardens, but in every gentleman's and farmer's garden in the county. Apples, pears, peaches, &c. are likewise propagated, of many various kinds, though not in such plenty, nor so good in quality, as in the more genial latitudes of South Britain, nor even with such success as in some other districts in Scotland, particularly in Clydesdale and the Carse of Gowrie, where, it should seem, the soil is more favourable, for the climate here is confessedly more temperate.

Strawberries.—It seems to be generally agreed on, that no where are the strawberries better than in the neighbourhood of Edinburgh. About two hundred acres are under this crop, of which a great proportion is on the banks of the Esks, by Roslin, Laswade, Newbattle, &c. the situation and the soil there being peculiarly congenial to this production.

There is no crop here so generally lucrative, giving frequently from 20l. to 30l. an acre, and in particularly favourable situations, will in some seasons be worth 50l. or more, though in other cases the crop will not be worth 5l. The cultivation, however, is always attended with great expence, requiring much labour, and a continued assiduity, in digging, cleaning,

be traced to no very distant period. HENRY PRENTICE, who died about nine years ago, was the first who cultivated White Peas, Potatoes, Turnips, and sundry other culinary plants, on an extensive scale, for the Edinburgh market, about the year 1746. Before that period, the supply was limited to what could be carried in baskets; his cart being the first that appeared with kitchen stuffs on the streets. He even raised cucumbers in the fields; but his cart load of these met with so little sale, as not to encourage a repetition. Though he died a pensioner on the poor's funds of the Canongate, his name deserves to be noticed with respect, not only as having introduced several of our best vegetables into cultivation, but from his practice as a cultivator, which was spirited and judicious, however little it turned out to his own account.

cleaning, picking, besides manure, &c. so that the neat profit is seldom more than 12l. or 15l. an acre: to this add, that it is but a small portion of ground that any one person is able to cultivate in this way, or even to oversee the various operations necessary.

Strawberries may be continued on the same ground for any length of time, with the precaution of completely eradicating the old stocks every fourth year, and replanting the ground with fresh shoots. It is, however, allowed to be better husbandry, to throw in from time to time a different crop, such as barley, clover, &c. in the course of twenty or thirty years at most; for even admitting that they may be continually kept up, it becomes indispensable to apply manure more frequently, than if the crop were now and then changed to something else.

The quantity consumed in Edinburgh has been calculated at 6000l. worth in a season. In the whole county, it may be reckoned at 7,500l. A small proportion of this comes from East-Lothian, as far as Haddington. They are sold from five shillings the Scotch pint to fourpence: the greater part by much, are sold at eight-pence and under. They are in season from the first of June to the first of August.

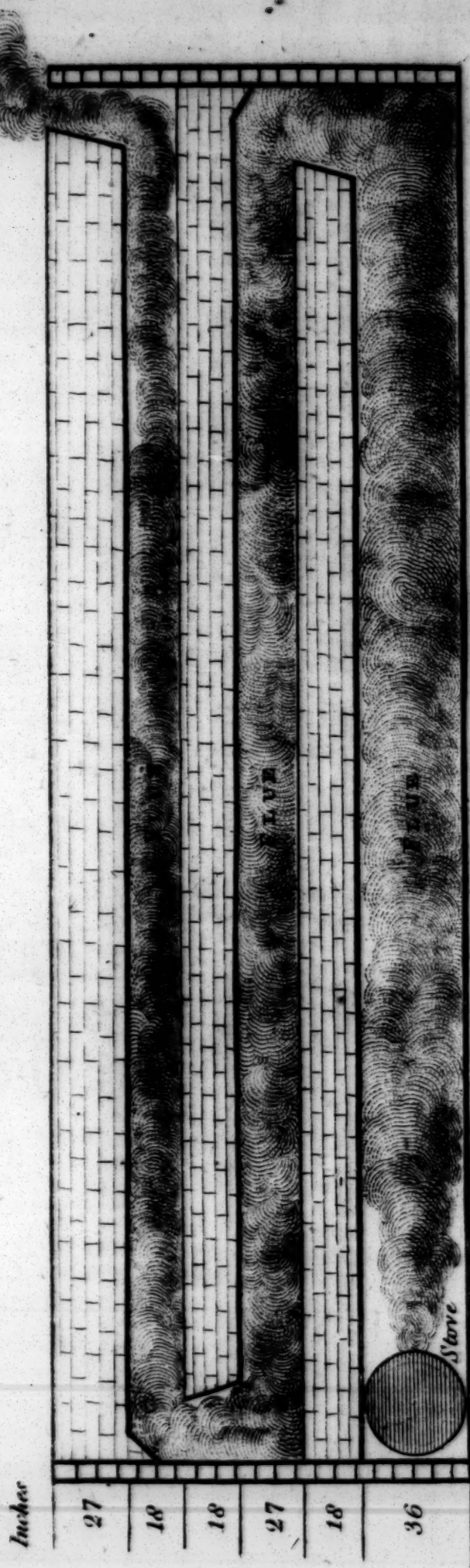
Nursery.—Though there is not much land occupied this way (200 acres, or thereby, in the county,) it is of considerable importance, not merely from the professional skill of the nurserymen, but likewise from the particular nature of the soil, so much adapted to this purpose, that all kinds of seedlings, forest, and fruit-trees*, are raised in such perfection, as hardly to be equalled any where else in Scotland.

Hot-walls.—Scotland has within itself every advantage for most

* It is a curious fact, that in propagating gooseberries from the seed (the common practice here,) the same berry is known to produce plants of many different kinds.

BOL

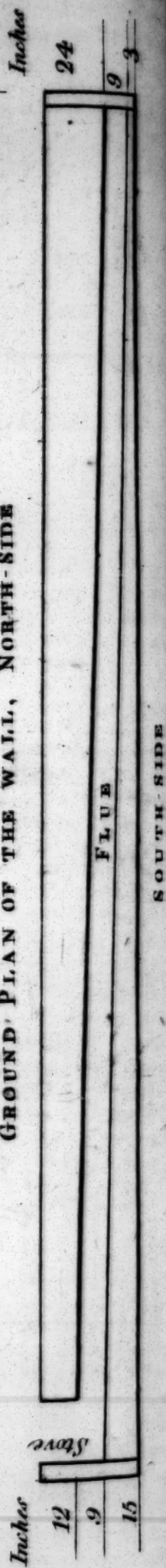
HOT - WALL



40 feet long, 12 feet high.

The course of the flue supposed to be uncovered, in order to show its direction.

GROUND PLAN OF THE WALL, NORTH-SIDE



SOUTH-SIDE

comfortable and even luxurious living; the finest fish, the most exquisite meat, and game of superior quality. Wine, sugars, spiceries, and other articles of that nature, it can easily import. The only thing it wants, therefore, which it neither produces by nature, nor can easily import, is fruit; and there art should be made use of to conquer the difficulties of nature.

Hot-houses certainly might be built, but they are expensive and troublesome, and are not necessary for any thing excepting grapes or pine-apples. But *Hot-walls* answer for peaches, apricots, and other fruits of that sort; and are not attended with much expence. The following plan, (*see the plate*) recommended by Mr MAWER at Dalry, in the vicinity of Edinburgh, it is believed, is not inferior to any thing of the kind known in this part of the country; and is probably the best yet adopted, both with regard to the effect, and to the economy in the disposition *.

The wall is supposed to be 40 feet in length, (a proper extent for the influence of one fire,) and 12 feet, more or less, in height. The flue makes three stretches along this wall; the first, or undermost, is 36 inches deep; the second, 27; and the third, or uppermost, 18; in them all, it is 9 inches from back to breast. The intervals between the courses of the flue 18 inches. The wall supposed to be 3 feet in thickness; of which, 24 inches is allowed for the back, 9 for the flue, and 3, (or the thickness of a brick) for the fore-side. It may either be built wholly of brick, or the back may be of stone; in which case, any garden-wall already built, may serve.

The expence will be as under, according to the present rates at this time in use, viz. 17s. the thousand for bricks; 4d. the yard square, for one facing of mason work; and

* Mr John Wilson, bricklayer in Thistle Street, has erected several on this principle, which have given satisfaction.

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and 6d. each foot in length of flue. Hence, where it is all of brick, it will require as under :

	£.	s.	d.
17,500 bricks, at 17s. per thousand, - - -	14	9	0
54 yards (double) building, at 4d. - - -	1	16	0
130 feet flue, at 6d. - - - - -	3	5	0
Total - - - - -	L.	19	10 0

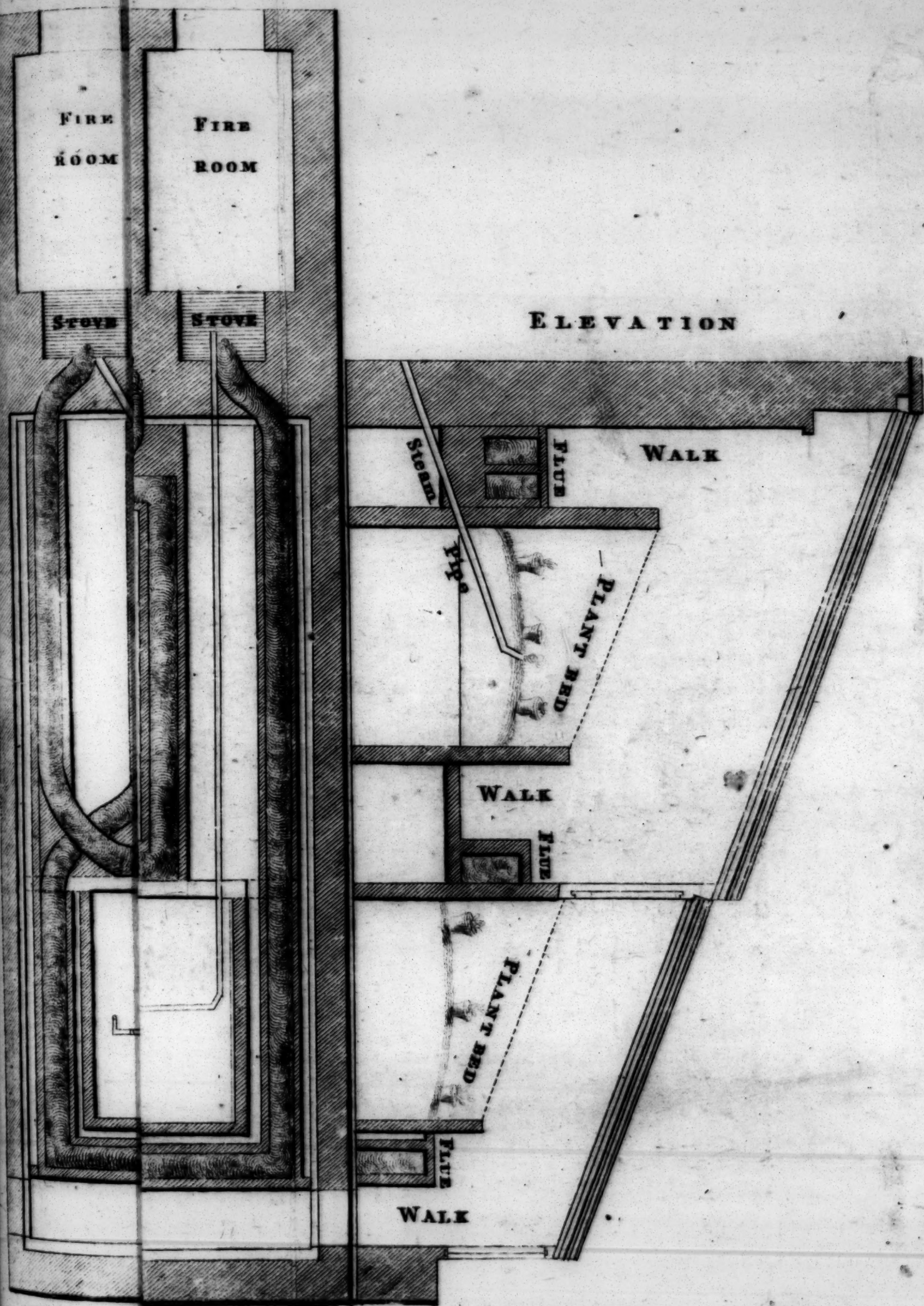
N. B. In the above estimation, each brick is supposed to occupy 9 inches in length, $4\frac{1}{2}$ in breadth, and three inches in thickness. In building, however, they occupy a greater space, owing to the lime, which, as mortar, takes place between them; on the other hand, there is no allowance made for *breakage*, nor for the price of the mortar itself, which must be various, according to respective circumstances. After all, this is not meant as a rule for artificers to be guided by, as they are generally competent enough to make their own bargains.

A ground-plan of this wall is also given, in order to shew the direction of the under flue, which it is necessary to keep, at the first, at a greater distance from the trees than afterwards, when its heat must of course be diminished.

If this hot-wall is erected against a stone-wall already built, it will, at the above rates, cost only about 7l. 10s.

Hot-Houses.—These are to be met with in many places in this county : but it is probable, that in none, (perhaps even in Britain) are they better constructed than those erected by Mr MAWER at Dalry, where, to the original system of heating by smoke conveyed through the flues, he has (at the same expence of fuel) added the very powerful and genial influence of steam also. The plan will best explain how this is accomplished, in which it will likewise be seen, that the flues are not conducted through the wall, (a system reprobated by this ingenious Horticulturist,) but more conformable to nature, and to existent circumstances, are led in different channels across the area of the building, taking care, that no part of the heat

End Lathen

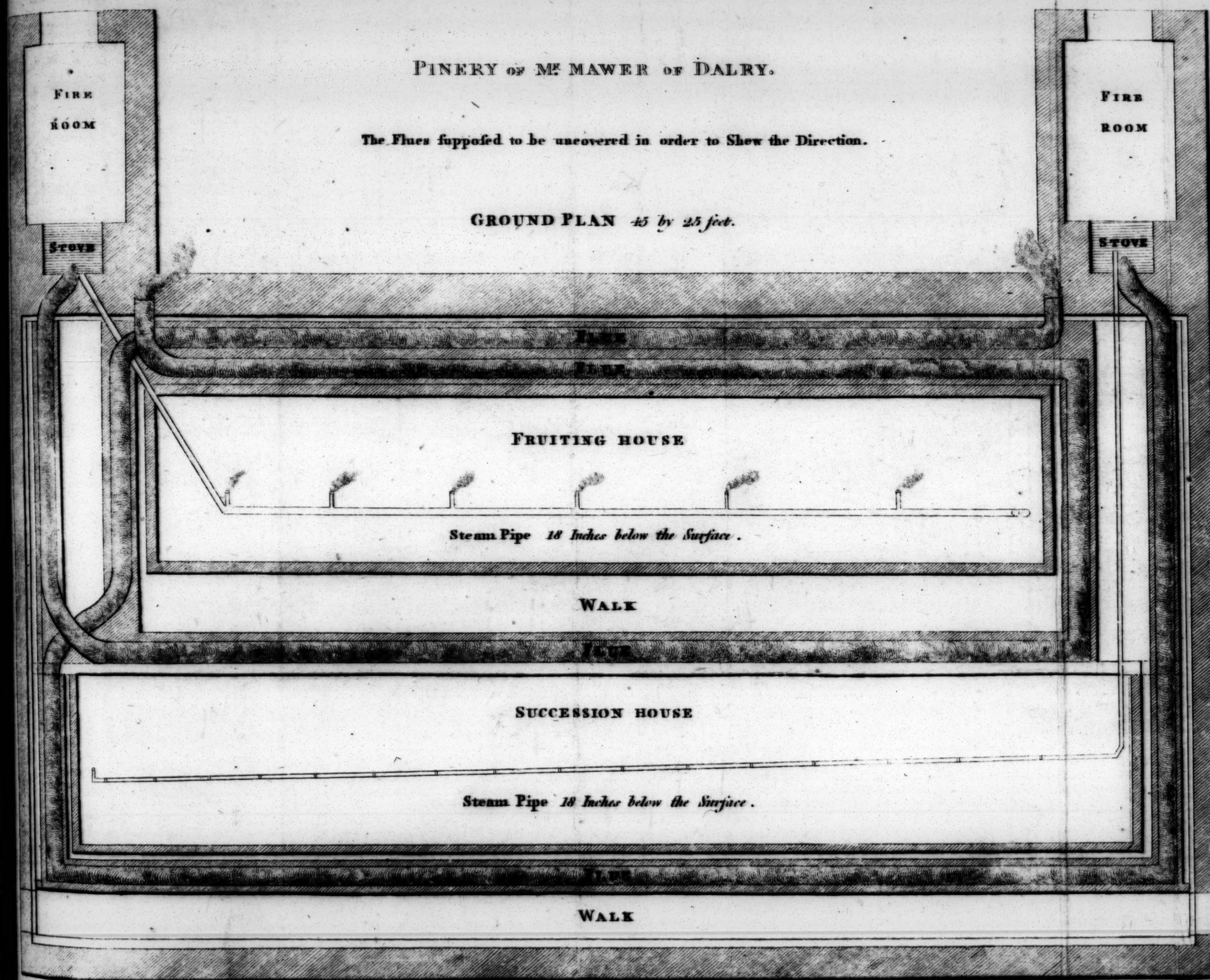


End Latham

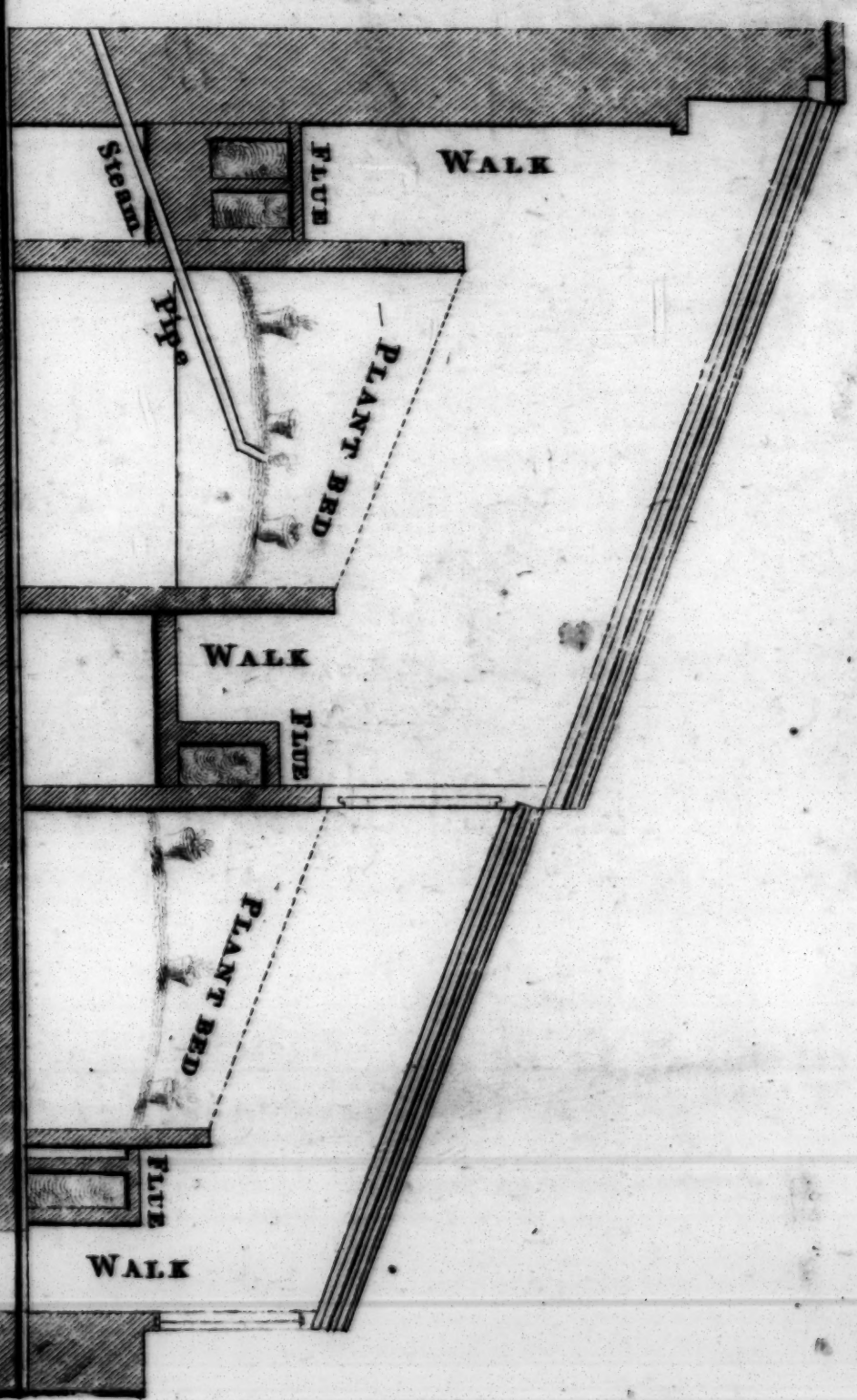
PINERY OF MR MAWER OF DALRY.

The Flues supposed to be uncovered in order to Shew the Direction.

GROUND PLAN 45 by 25 feet.

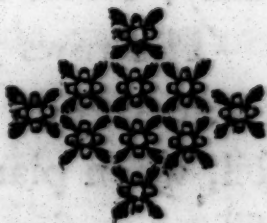


ELEVATION



heat is lost by communication with the walls, between the flues and which, there is always left a vacant space.

N. B. Comparing the heat derived from a brick wall with that arising from one of stone, Mr MAWER has found, from a series of accurate observations with a thermometer, that the proportion in favour of the first is only as 48 is to 46.75; a circumstance that ought not to appear surprising, when it is reflected on, that bricks, even from the first, are more apt to imbibe moisture than stone, which also becomes less and less damp the longer it remains exposed in a wall; so that the advantages to be derived from building hot-walls with brick, instead of stone, are not so great as are generally imagined.



CHAPTER X.

WOODS AND PLANTATIONS.

THERE may be, perhaps, about 5000 acres occupied by natural wood and plantations, of which the last is by far the greatest proportion, the first being only found on the banks of a few of the rivulets; the second are to be met with around every gentleman's seat in the county. The following are the principal kinds cultivated:—Oak, in many places, is very flourishing. Elm and ash never fail to thrive; and, as well as oak, find a very ready sale. Beach and plane trees are the most luxuriant in growth, but are not much valued as timber. The Scotch fir is much cultivated, but to very little purpose; for it neither grows large, nor is the wood much esteemed. The larix seems to succeed best of the fir kind; next to it the silver fir; but the spruce fir does not thrive at all, becomes soon stunted, and is even worth less than the common fir itself. It may, in general, be remarked, that over the whole county, forest trees, planted in hedges-rows, come to no good. The rows planted together are too few, by which they perish merely for want of shelter; for the same kinds, on similar soil, when planted thicker, thrive well enough. A thin belt, of four or five rows, will not stand the climate here; there should be 20 rows at the least*.

CHAP.

* The planting of forest trees cannot be too much encouraged in this country; not only on account of the timber, which is every day growing more valuable, (being advanced in price 40 per cent. within the last 10 years,) but also from the great shelter which they afford to the surrounding lands. The operation of the law is, however, in some degree against it, by debarring the tenants from the profit of the woods they may have planted themselves, which they neither are allowed to cut down again, nor entitled to the value at the end of their leases. Many waste corners would long since have been planted by them, had it not been for this prohibitory regulation.

CHAPTER XI.

WASTES.



IF by wastes are understood lands either unappropriated to any particular possessor, or belonging in common to several, there are not any, so far as I know, at least in the low parts of the county; and perhaps few or none in the moorlands.

There are, however, many extensive tracts of poor land, chiefly moss or swamps, that have never yet been brought into cultivation, being solely employed in pasture, and yielding a very scanty subsistence to the sheep, with which they are in general stocked. The quantity, in whole, may perhaps be from 30,000 to 40,000 acres, of which a great proportion lies in the south-west extremity of the county from West Calder to the confines of Lanarkshire, as may be seen from the Map. How far these lands may be meliorated in their nature, were attempts made to improve them, is what I will not take upon me to determine; but I believe, that the capital at present employed in agriculture, or what may afterwards be brought into that channel, will be applied to much better purpose in improving the lands already in cultivation. For the means of which see the CONCLUSION of this Work.

CHAPTER XII.

IMPROVEMENTS.

SECT. I.—*Draining.*

IN many tracts of this country drains form a most important branch of improvement; and there are but few farms where draining is not still necessary, although much has already been done. The common mode is by a ditch 3 feet deep, $2\frac{1}{2}$ wide at top, and 9 inches at the bottom; which is executed for about 3d. or 4d. the rood of six yards in length. This ditch is filled up half-way with small round stones from the adjoining lands; on these a slight layer of old straw is laid, to prevent the mould, with which both are covered, from intermixing. The plough passes over them without interfering; and they are known to remain entire, and the drain to keep running, for ages. This branch of husbandry is perfectly understood here; as even the common labourers can point out the place where the ditch ought to be.

There is hardly any operation in husbandry that pays so well for the expence as this; as it is not only accomplished for little money, but the soil, thus relieved of the superabundant moisture which rendered it fit for nothing, becomes the most productive in the fields, for a great many years to come.—This, however, like many other improvements, has been effected solely by the exertions of the tenants, though the landlords undoubtedly derive the greatest, or at least the most permanent, advantages from it*.

SECT.

* Drains ought to be nearly as wide at bottom as at the top; because, if the water is resisted by a stone, it has many other ways to pass, by which it keeps

SECT. 2.—*Paring and Burning.*

Not practised.

SECT. 3.—*Manuring.*

From Edinburgh and Leith are obtained about 40,000 cart-load of street-dung annually, which is commonly expended on the lands within 5 miles of town, though there have been a few instances in which it has been carried by sea to a greater distance. For collecting this manure, arising from the sweepings of the streets, which are for this purpose arranged into districts, the town employs scavengers, and the farmers in the neighbourhood furnish carts to carry it daily to by-places, without the walls of the city, laying it together in dunghills, from which at their leisure they drive it to their lands. It costs from 1s. to 1s. 6d. a load, of about a cubic yard each. Stable-dung is sometimes sold at a dearer rate, particularly where it is exchanged for straw (the whole dung for the whole litter) when it may cost perhaps 3s. or 4s. Thirty or 40 load to an acre is the usual allowance, and which has always the greatest effect when laid on new from the streets, but

keeps its course clear; whereas, if only 9 inches at bottom, and a stone of more than ordinary size gets there, the water is obstructed, and a sand-bank immediately forms, greatly to the prejudice of the drain, especially on wet lands. Draining, in general, is by no means so well understood, that a common labourer can point out its direction. In places where there is stagnate water collected, any person may point out the line, but in what is generally termed spouty land, the draining has often baffled the skill of experienced farmers. Spouty lands are generally on a declivity, and the water, when resisted by a stratum of clay, issues out in different places: the way that has been generally practised is to cut a drain near the head of the spungy land, which if you cut through a stratum of sand from which, for a considerable space, issues a large quantity of water, your object will be gained; but if your drain never get below the clay, it will not carry off the springs. In land where these springs are frequent, and issuing out in many places in the same field, I have found it the surest method of effectually draining it, to lead a drain straight from the bottom of the field up the middle, until it is above where the spouts break out, and then lead cross-cuts at short distances from the main drain.

J. N.

but this, however, is only practicable in small quantities, great part of it being kept a whole year before it can be applied.

Farm-yard dung, in the neighbourhood of Edinburgh, is made at the rate of perhaps $2\frac{1}{2}$ load for each acre in the farm, and would be much more, were it not for the universal practice which prevails there of sending a great proportion of the straw to market. On a farm of 100 acres, (in cultivation, excluding hills and meadows) from 30l. to 50l. worth of straw will be sold in a season; but then, for 20l. twice as much manure can be bought as the whole could have produced had it been consumed at home. The servant who takes the straw away, also collects the street dung, these two branches of labour being generally united for the sake of economy.

Straw is very seldom brought, or dung carried, above five miles from town. In order to obtain as much manure as they can, the farmers beyond that distance generally keep as many cattle as consume the whole fodder on the lands. Where turnip is cultivated, a still greater and richer supply is produced. A small quantity is also got from the country-towns and villages, but always at a much dearer rate.

Lime abounds in different parts of the shire, and although but little known as a manure in the low part of the county, yet it is much used for that purpose in the upland districts, as well as in the adjoining counties to the south, Berwick, Roxburgh, and Selkirk, to which it is brought from Mid-Lothian, by a land carriage, sometimes 20 or 30 miles. The farmers in the neighbourhood of Edinburgh are*, however, justified

* The farmers in the neighbourhood of Edinburgh are certainly justifiable in the disuse of lime, as the street-ashes must act as a stimulus; but on the lands at a distance from the metropolis, which have been accustomed to no other kind of manure but farm-yard dung, lime will have considerable effect; suppose it repeated every 10 or 15 years, but it will never act in that powerful manner it does on land newly brought into tillage.

In treating of lime, it will be proper to give some account from whence that notion has arisen, that lime has little or no effect when repeated a second time. A great extent of muir ground in the neighbourhood of the Pentland

fied in their difuse of it, as its effect there is fo very feeble, and even dubious, which may perhaps be accounted for, from the lands having been fo long manured with freet-afhes, which may have precluded the agency of the lime as a ftimulus, or rather from having been fo long in cultivation: for it is certain, that it is on ground newly brought into tillage that lime has the greateft power *.

Shell and ftone marls are to be had in different places, and have been ufed as manures; but the benefit has not been fo evident, as to give much encouragement to the application †.

Compoft dunghills, confifting of ditch fcourings, lime, weeds, road-foils, &c. are often made; which being intimately intermixed, are found to be a good, though not a very powerful manure ‡.

Farm-

land hills, has undergone a kind of improvement by liming, which has rendered it worfe than when in a ftate of nature, which was entirely owing to the injudicious cropping after the liming. The lime was laid upon the furface, and ploughed in, and the land fown with oats, from which they had fome very good crops; (8 or 9 bolls an acre is not uncommon for fome years after the liming,) but the land being generally let on fhort leafe, with no reftriction, it was cropt as long as the produce was equal to feed or labour; the land being thus almoft reduced to a *caput mortuum*; fo that lime, when it was laid on thefe grounds again, was found to have little or no effect. The operation of lime is to bring into action the vegetable fubftances contained in the foil; but, by injudicious cropping, it may leave the foil fo exhausted of the means of reproduction, as nothing but a long feries of pafturning will recover, and the pafture, after fuch treatment, will be very bad, and deftitute of nutritive qualities.

J. N.

* That it is fo, is incontrovertible.

T. S.

† This in general is fo, I have repeatedly tried both, but fcarcely perceived any effect.

T. S.

‡ It is not uncommon for very judicious and intelligent farmers, to ridicule the making of compoft dunghills, but I have frequently made them myfelf, and obferved others ufe them with very good effect, and have long been perfuaded, that by a little attention to the making up of compoft dunghills in many fituations, a confiderable increafe of manure might be acquired. In general, where compoft dunghills are made up, they are fuffered to lye too fhort a time, and not fo often turned over as they ought to be.

T. S.

Farm-yard dung is generally turned in the dung-hill *, the better to promote fermentation, and consequent putrefaction; but the less time it lies, after this is accomplished, is understood to be the better: likewise, when laid on the land, the sooner it is ploughed down, the greater is its effect. Yet it is customary to spread manure on grass-grounds, where it must remain long exposed †; but it is always the shortest and best made that is thus applied; and being done in the winter season, when the powers of rarefaction are least, it is less apt to be dissipated by exhalation. The rains also, frequent at that time, contribute to retain it, by washing it down among the roots of plants ‡.

SECT. 4.—Weeding.

Of weeds there are, perhaps, more than are to be met with in any other district in Scotland; probably from being so near to the metropolis, from which the seeds are readily circulated

* Turning over dunghills of all kinds is become very common, and amply pays the expence when hands can be got. Short dung in dry weather, and rank dung in moist.

T. S.

† All manure is toll free: a wise regulation, which, by removing a considerable obstacle, tends to promote the melioration of lands, by the application of enriching substances, which cannot be too much encouraged. An attempt, however, was made about nine years ago, to get manure included under turnpike duty; but was resisted with great firmness by the farmers, who were successful in the contest. The city of Edinburgh joined their opponents, but having at that time a considerable district of street-ashes to let, no farmer would purchase it; so that the *good town* had to collect the *fulzie* itself for several weeks, till the husbandmen came into better temper. Street manure has declined in value ever since: the farmers endeavour to provide themselves in greater abundance at home, persevering, from interest, in a measure to which they were at first prompted by disgust.

G. R.

‡ Dung ought never to be applied in this way but where there is great command of it, being a great abuse of a most valuable article; in dry seasons, the qualities of the dung are chiefly exhaled or evaporate, and in heavy rains, except on sandy, or gravelly soils, the light parts, which is the richest, are washed away. Compost well reduced, continues to have effect longer than richer dung.

T. S.

circulated in the street-dung carried to the country; which, besides, makes the soil thereby so much enriched, as to raise them in greater luxuriance. The kinds most prevalent are, the skeldrick in all its varieties, of wild radish, wild mustard, &c. the thistle, the dock-weed, and couch-grass, called here *wreck*.

It is a very general practice, to employ women and girls, in the beginning of summer, to go through the corn fields, pulling up the stronger weeds by the roots, or cutting these and the smaller kinds with the weed-hook; but the more complete eradication of weeds, with which our fields are infested, must be looked for from summer-fallowing and drill-cropping, which are every year becoming more and more prevalent in every district in the county.

SECT. 5.—*Watering.*

Not known in the county, but several intelligent farmers are of opinion that it would be beneficial, and it is probable that some attempts at ascertaining its value will be tried.

CHAPTER XIII.

LIVESTOCK.

 SECT. I.—*Cattle.*

IT is but of late, that attention has been paid to the different breeds of animals in this county. Having the metropolis in its bosom, the preference has been given to the cultivation of grain and vegetables for the Edinburgh market; leaving, in a great measure, the rearing of cattle to the more distant counties, where, from the lower rate of rent, the profits arising from pasture are more to be depended upon.

The breed of black cattle has hitherto been little attended to here, and as the price still continues moderate, there is little probability that the farmers will soon be induced, in this high-rented county, to enter into a competition, in regard to this article, with the breeders in more distant places, some of whom have equally good pasture at less than half the rent. Milch cows are, however, highly worth cultivating, in so populous a neighbourhood, and have always been reared for that purpose. At the same time there is no breed peculiar to the county, the cows consisting of almost every kind in Britain*. The greater part are short legged and thick bodied, weighing

* SIR JOHN CLERK, whose attention to Rural Improvements is well-known, is decidedly of opinion, that the Galloway breed is by far the best species of cattle for the greatest part of this county, if not of Scotland in general. The Highland cattle are certainly excellent, both in regard to shape and hardiness, but they are of so wild a nature, and so untameable, that they cannot be fattened half so quickly. Poll'd animals, of every species, are always of a tamer and more quiet disposition than the horned, and consequently are more

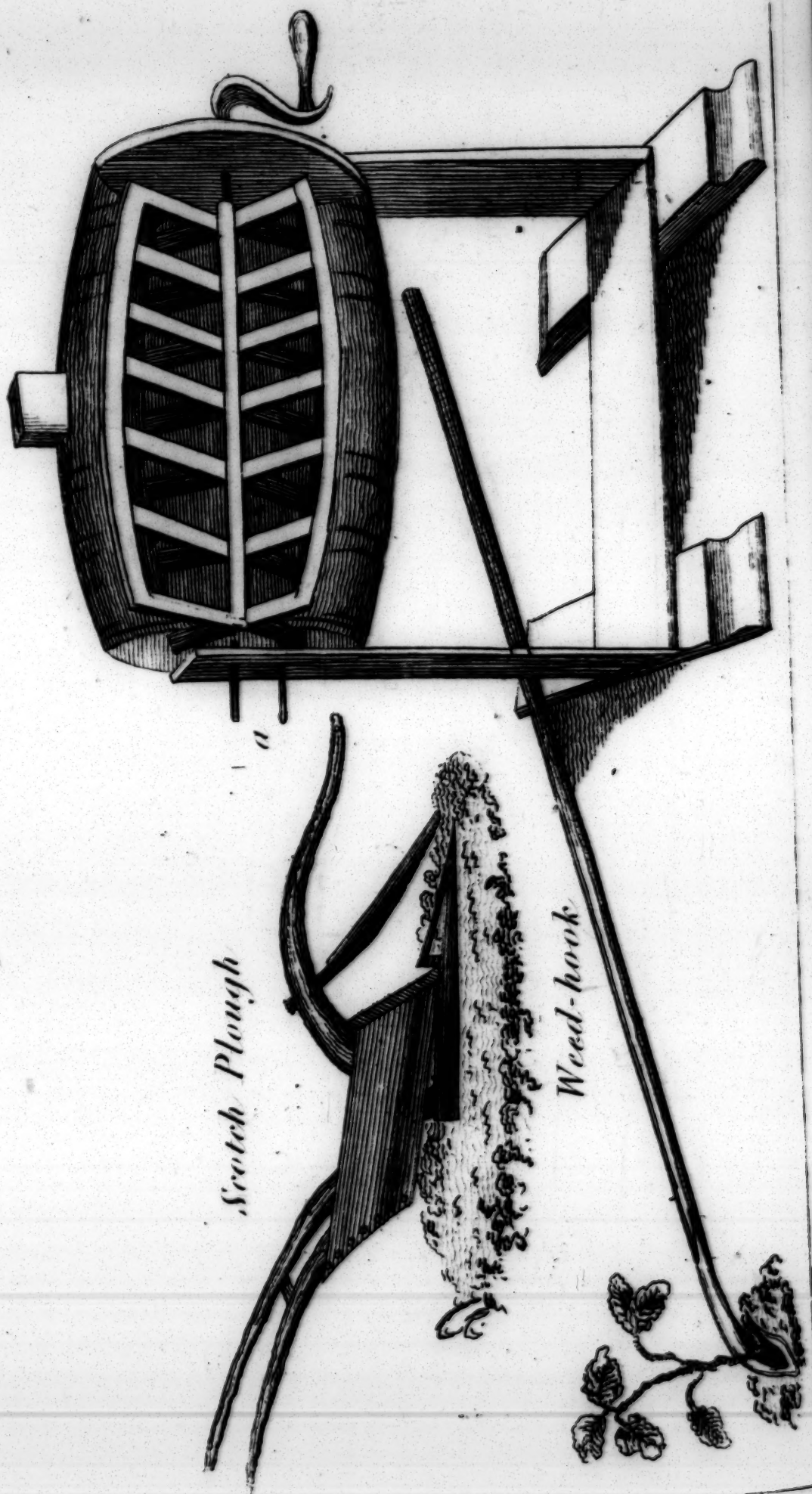
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Patent Barrel-churn.

(a) a pin to prevent the barrel turning round.



weighing from 24 to 36 stone, (16lb. Amsterdam each) worth from 6l. to 9l. and giving from 8 to 15 Scotch pints * of milk a day; which yields at an average a pound trone, (22 ounces) of butter for each 10 pints. This sells from 10d. to 1s. 3d. the pound, and is generally made from milk not above 2 or 3 days old, in the common plunge churn. Of late a patent barrel churn has been introduced, which has the effect of diminishing the labour, and improving the quality of the butter, by the admission, through a funnel, of a free communication with the air, which prevents any rancidity †.

T 2

New

more easily fattened, and at less expence. Poll'd cattle, it is well known, are also much better calculated for working, and for being driven in droves, or great numbers at once. It is well known, that no sort of cattle sell better at the English market than the Galloway. On the whole, therefore, that species of stock seems to be well entitled to the attention of the Mid-Lothian farmer.

* The Scotch pint contains 103.4 cubic inches, the English wine pint 28.875, and ale pint 25.35.

† *Experiment, with a view to Investigate the Chemical nature of Churning.*

From the swelling and foaming of the liquor during this process, I was led to conclude that gases were evolved from it.

To ascertain this point, a glass tube was fastened in a plug of cork, fixed in the funnel of a patent churn, belonging to Mr ROBERTSON at Granton. The lower extremity of the tube was immersed in water, and the joints of the funnel and cork luted, so as to prevent the access of external air, and cause the gases emitted by the liquor to pass through the tube, into an inverted glass jar, previously filled with water.

To our great surprise, no gases whatever were emitted during the process; and the water from the basin constantly rose in the glass tube, which shewed that the atmospheric air was rushing into the liquor, instead of gases rushing from it, as we expected, into the atmosphere.

The conclusion which seems to follow from this experiment is, That in churning, the saccharine part of the milk combines with the oxygen of the atmosphere, by which it is converted into acid, and precipitates the oil, or butyraceous part.

This experiment might give rise to many important observations concerning the nature and management of milk, but it should be previously repeated with varied circumstances, in order more fully to ascertain the facts.

Granton, 18 Dec. 1795.

J. HEADRICK.

New milk sells at 3d. the pint, and is obtained only in town, or the immediate vicinity. Butter milk is sold at 1d. and is brought from all the country round, some of it as far as 15 miles: formerly in barrels of 16 pints each, 2 on a horse at a time; but now in small carts, in which are 6 or 8 of these, besides butter, eggs, &c. There may be about 1000 or 1200 milch cows brought into this county yearly to keep up the stock, chiefly from the Merse and Tiviotdale, and which are principally bought up by the cow-keepers in the suburbs of Edinburgh, who generally feed them off the first season, as soon as they go dry, with grains, turnips, yams, &c. Neither the making of cheese, nor the feeding of calves for veal is much practised here, the demand for butter and milk being sufficient for the whole produce of the dairy; and as a description of the common practice, may have its use, the following authentic statements of it are subjoined:—

Case 1. A gentlewoman in the vicinity of Edinburgh, who has been much accustomed to the management of a dairy, states, that she has always been used to churn the whole milk in a plunge churn, with a *swée* (a lever applied to the end of the churn-staff,) which she thinks is much preferable, on account of its greatly facilitating the operation. In warm weather the milk is fit for churning in 48 hours, keeping it from the churn till it is cool; but in cold weather it must be put in warm, to make it thicken sooner; for it is not fit to be churned till it is thick, and in great cold, it is even necessary to set it in a warm place, to promote the coagulation, as the sooner this is accomplished, both the butter and the butter-milk are the better; for when the milk is long kept, it contracts a disagreeable rancid taste; on which account, chiefly, she prefers churning the *whole milk*; for in making butter from *cream*, the milk must be kept long, in order to obtain all the cream from it: but whether churning milk or cream be most profitable, is not yet ascertained in this neighbourhood; though it is held, that the milch-butter is most palatable, at least will keep much longer sweet. In warm weather, cold water is put in during the operation of churning;

ing; and in cold weather, boiling water in proportion to the degree; but in temperate weather none at all. It generally takes from one to two hours to churn; but that depends much on the temperature of the milk, for if it is either too warm or too cold, it requires a longer time. As to the quantity of butter from the milk, it is not easily determined, as the milk of cows differs so much in quality. It is generally observed, however, that the milch of those cows which give most, is the worst in quality; but that is not always the case; for she has had cows that gave very little milk, and that very bad, and others that gave a great deal, and very good in quality: in particular, one cow that yielded between 17 and 18 Scotch pints (from 8 to 9 English gallons) of milk in a day, and from that quantity produced two pounds (22 oz. each) of butter, which she thinks is more than the average, for the common computation is about 10 or 11 Scotch pints to the pound of butter.

Case 2. A gentleman who had tried an experiment, in order to know whether it was most profitable to churn the whole milk, or only the cream which the milk produces, states, that he had a favourite cow that gave 18 Scotch pints of milk a day, of a seemingly rich quality, from its cream-like appearance; that he caused one day's milk to be churned by itself, which produced only three fourths of a pound of butter: that he afterwards caused the cream of two day's milk to be collected, and from that he had 3 lb. 2 oz. of butter; from which remarkable disparity he is decidedly of opinion, that it is much more profitable to collect the cream, and churn it, than to churn the whole milk together. He thinks also that cream butter is much richer than the butter got from the whole milk, which seems indeed to be pretty generally acknowledged. On the other hand, he owns that it will not keep so long sweet; which arises, perhaps, from the very circumstance of being more oleaginous, and hence more apt to corrupt. Respecting, however, the above experiment, in further explanation of the circumstances, it appears that the one day's milk was collected from the noon of one day,

to

to the morning of the next, then immediately churned; whereas the two day's cream was collected on a Thursday and Friday, and remained to ripen till the Monday following, before it underwent that operation; which may perhaps account in a great degree for the difference in the produce.

Case 3. A considerable farmer in the neighbourhood of town, states, that he uses a patent churn, which holds 40 Scotch pints (20 gallons English,) but in which only 24 pints can be churned at a time: that it is milk, not cream, that he churns; which is prepared by being put, when warm from the cow, into an earthen pan to cool, and then turned over into a deep wooden vessel, to remain until it acquires a sufficient degree of acidity and thickness; and from 24 pints of milk there are commonly $3\frac{1}{2}$ lb. (22 oz. each) of butter, and sometimes more. He is of opinion, that the butter is somewhat poorer than is obtained by this mode of churning; for this reason, that the operation being quicker, and more violent than in the common plunge churn (being performed in an hour, the other generally takes two,) it has the effect to produce a greater quantity of butter, leaving the milk quite exhausted, and very poor in quality; that substance which might remain amongst the butter milk being, by this means, converted into butter; and being the poorest part of the composition, tends to make the butter itself less rich than it would otherwise be; although, on the other hand, the quantity he thinks is greatly augmented.

Case 4. In my own dairy (if the management of three or four cows deserves the appellation,) the cows are milked in summer thrice a-day; in the morning, at noon, and in the evening. Each milking is kept by itself, in flat wooden vessels, to cool till the next milking, when it is poured into the churn, the succeeding milk taking its place in the flat vessels, too cool in like manner; and thus in succession for two or three days, according to the temperature of the air; the milk thickening, and thence is fit for churning soonest in the warmest weather. The quantity of butter is generally in proportion

proportion of a pound (22 oz.) for each ten pints, or 5 English gallons of milk. In winter, the cows are milked only twice a-day, and the milk is put into the churn warm from the cow, where it stands a day or two longer than in summer, before it becomes sufficiently thick; although, to promote the coagulation, it is brought sometimes near to the kitchen fire, particularly on the preceding night before it is churned: and in intense cold it becomes also necessary to add a small quantity of boiling water. The operation of churning is performed, with the plunge churn, in from two to three hours, for 30 or 40 pints of milk; and at the last stage of the process, a little cold water thrown in has the effect to promote the separation of the butter from the milk, making it to adhere more closely together. In all the operations, it is understood to be of great moment to attend to the cleanliness of the different vessels employed; they are therefore carefully rinsed from time to time, and endeavoured to be preserved in all possible purity.

It is singular,* that the best mode of making butter should not yet have been decidedly ascertained; and it will probably require a variety of careful experiments, under the direction of the Board of Agriculture, before this important art can be brought to perfection*.

Before concluding this important subject, the attention of the reader is particularly requested to the following observations, respecting the advantages of feeding milch cows in the house, in preference to keeping them out of doors, being the substance of a paper sent by Baron d'Alten, an intelligent Hanoverian nobleman, to the Board of Agriculture:—

The Baron remarks, that milch cows are infinitely more profitable, kept in the house, than out of doors, but they must be early trained to it, otherwise they do not thrive.

The

* If a gentle warmth is necessary for thickening the milk, perhaps the boilers made of wood, invented at London some years ago, by a native of Germany, might answer the purpose. It is now ascertained, that a very good kind of butter can be made from whey, for which see the Appendix, No. 6.

The best kinds of food for them, are, clover, lucerne, potatoes or yams, turnips, carrots, honey-grass (a German grass not known in England,) cabbages, pease and beans.

Such cows as those in the neighbourhood of London, kept in the house, and properly fed, ought to yield 9 English gallons (18 Scotch pints) per day, for the first 4 months after calving. Afterwards the quantity will become less and less.

But on the supposition that such cows yield, at an average, only 6 gallons for 9 months, or 252 days, that at 6 d. per gallon produces 3 s. per day, or in 9 months, 37 l. 16 s.

If, from any circumstance, the milk cannot be sold fresh, the profit will be much less, but is still very considerable. Each 5 gallons English (10 Scotch pints) of milk should produce a pound of butter. Hence, in all, 302 lb. worth, at 1 s. per lb. 15 l. 2 s. The butter milk, for the purpose of fattening swine, should be worth 7 l. 11 s. Total 22 l. 13 s.

An English acre, of a middling soil, should produce 20,000 lb. weight of green, or 5000 lb. of dry clover.

A large cow requires 110 lb. of green, and $27\frac{1}{2}$ lb. of dry clover per day; consequently in 365 days 40,150 lb. or a trifle more than the produce of two acres. Whereas the same cow, fed entirely out of doors, summer and winter, would require the pasture of 4 acres, the ground would be injured by being poached by their feet, the grass hurt by being bruised instead of cut, and the manure would not be half so useful.

According to the first calculation; each acre should produce in milk 18 l. 18 s.; and by the second, (in butter and butter milk,) 11 l. 6 s. 6 d. besides the value of the manure.

It has been found, that currying cattle, fed within doors, and keeping them as cleanly as horses in a stable, is attended with the best consequences, both in regard to the milk they yield, and the rapid improvement of the carcase.

Every possible mode of using so common, but at the same time so valuable an article as milk, cannot be too well known in a country where it can be raised in such perfection and abundance.

abundance. We shall therefore proceed to state, not only another mode of manufacturing this article, which has been adopted in Mid-Lothian, but will also include in our Report, a receipt for making a new preparation from milk in this Island, which the Swedes have the merit of inventing.

Corstorphine cream.—The following is extracted from the Statistical Account of the Parish of Corstorphine, in this county: “They still prepare for market, a considerable quantity of what is well known over the kingdom by the name of Corstorphine cream. I have not been able to receive any account of the time when it was first introduced. I have no doubt but it hath a just claim to a very great antiquity; nor do I know if the same mode of preparation hath always been in use; at present, there is some variation observed. I believe the most approved process is very simple, and is as follows: They put the milk when fresh drawn, into a barrel, or wooden vessel, which is submitted to a certain degree of heat, generally by immersion in warm water; this accelerates the stage of fermentation. The serous is separated from the other parts of the milk, the oleaginous and coagulable; the serum is drawn off by a hole in the lower part of the vessel; what remains is put into the plunge-churn, and after being agitated for some time, is sent to market as Corstorphine cream.”

RECEIPT TO MAKE SWEDISH MIS-OST.

Communicated by Sir JOHN SINCLAIR, Bart.

The whey, remaining after the making of cheese without salt, is passed through a sieve, and slowly inspissated by evaporation; it must be continually stirred; when it has acquired the thickness of gruel, an eighth or a tenth part of cream is poured in, and soon after it may be taken off the fire; it must either then be left in perfect repose, or be continually stirred, otherwise it will shoot into crystals. In this state, as it has the consistence of butter, it is called Mis-Smor, and it need only be put into a cloth as cheese is, and in a few days

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it acquires the consistence of cheese, and is then called *Mis-Ost*. After this it may be farther dried in the open air. It may be eaten as *Mis-Ost* in four or five days. In *Dalecarlia*, it is made chiefly from the whey of goat's milk.

The above, is an exact copy of my receipt, which I received in *Dalecarlia*; but a Gentleman, who has long resided in Sweden, and who has had great opportunity of observing Swedish economy, informs me, that,

1. If salt be used in making the cheese, it does not signify.
2. That little care is required in evaporating the aqueous parts, and stirring is not necessary; for the common peasants put it over the fire before they go out in the morning, and do nothing to it till they return, many hours after.
3. That, as it is used by the peasants, no cream is added.
4. That it is made from the whey of cow's milk, as well as from that of goats.

And he confirmed me in the opinion, that it was only half the price of common cheese.

From this it appears, that wherever cheese is made in quantities, this, if liked, may be made.

From its keeping so well, and possessing the properties of the sugar of milk, it might be used in our navy, and particularly on long sea-voyages, with great advantage.

INDIAN CATTLE.

Before concluding this account, it may be proper to take notice of a very singular breed of cattle, lately introduced from the East Indies into this county, by Lieut.-Col. A. Murray, on his lands at Trinity Lodge, near Edinburgh, and of which the drawings annexed will serve to convey a pretty just idea of their figure. They are natives of Hither India, from Guzerat, and Myfore, on the coast of Malabar; and in these countries are principally used as beasts of draught, or carriage; being well adapted to such purposes, from their uncommon



GUZERAT BULL

Drawn by A. Hay

Engr'd by J. Kirkwood & Son



mon strength and fleetness, travelling with ease, it is said, at the rate of 8 miles an hour. The oxen of the Guzerat breed in particular might answer well in this country for draught, as they attain to a very considerable size; and from the appearance of this specimen of them, they have every indication of vigour and activity, and at the same time are remarkable placid and gentle in their demeanour, approaching with mildness, and shewing their friendly disposition by licking the hands and cloathes even of strangers.

They have much of the sagacious physiognomy of the elephant, with the same remarkable small eyes, and a hoggish looking front; the ears uncommonly large, and like to that animal in this also, that the one is ever pointing forward, and the other backwards, by turns, so that they are viewing, at the same time, both before and behind; probably an oriental instinct inherent in domestick animals there, the more securely to guard them against attacks from their ravenous enemies. For the same reason it perhaps is, that the whole troop, when reposing in the field, lye or stand as close together as they can pack; they even seem to have, like our horses, the faculty of sleeping on their feet, as seemed to me to be the case when I went to view them; the bull, in particular, appeared to be in that state; but arousing himself when I approached, he beheld me for some time with attention, but re-assuming his confidence he fell again to his slumbers, groaning very deeply, yet starting at short intervals. he was ready for defence if necessary; and although he allowed people to handle himself with unconcern, he seemed much displeased when any went near the female, tossing his head, and stamping hard on the ground with his feet, which appear, indeed, to be strongly formed by nature for offensive use.

The skin is uncommonly bright and clear of the hair, superior in these particulars even to any deer, I should suppose, in this country; while the horns (of the Mysore cow in particular,) are without annulets, or *litbs* as we call them, and in colour, apparent form, and consistency, are a good deal resemblant to the tusk of the elephant.

How the breed may prosper in this country cannot yet be

determined, as they have been so short a time here, (I believe only two years;) nor has any cross with our own cattle yet been attempted; but it is in contemplation to try them in that way, and, should they succeed, I should suppose that they may prove a valuable acquisition as draught cattle, and probably for the butcher too, as they appear to have a tendency to fatten; they, however, shew very little indication of milk.

The Indian cattle above described being, to all appearance, calculated for the draught and for the butcher, but not for the pail, naturally leads to the investigation of that important question, Whether there ought not to be two distinct breeds of cattle;—the one adapted chiefly for milking, and the other principally for the shambles. Much light on this subject can hardly be expected from the practice of a county where breeding is so little attended to, and where the dairy is formed on so small a scale. Yet the following circumstances, which I conceive to be facts, may tend to illustrate it.

1. Good milkers are almost always disposed to be lean; at the same time, it must be observed, that lean cows are not always good milkers.

2. Cows inclined to be fat, are very seldom good milkers; yet all bad milkers are not disposed to be fat. Perhaps the best sort for a dairy, would be those which gave plenty of milk when young, but had a tendency to grow fat when old.

3. Good milkers have frequently a bad milking progeny. This every farmer's wife and dairy woman can testify; for there is no point they pay more attention to, than to rear from their best milking cows, and few in which they are so often disappointed. This may arise perhaps from another circumstance, which is, that,

4. The bulls in this county are chosen at random, except with regard to their fitness for propagation; indicated from their robust or masculine features when calves, from which it perhaps happens, that they become so fierce and untractable when old, that few people care for keeping them, at least

least in the vicinity of the town; of course, the very purpose they are bred for is in part defeated, from too great a proportion of females to the male; and, at all events, the nature of the animal, if there is a distinction in nature, may be very opposite to that which is wished for by the breeder.

So far every thing tends to leave this question in uncertainty, but what follows has more the appearance of precision, and it shall be stated,

5. That polled cattle have almost uniformly a tendency to fatten, and generally have little disposition to give milk. This fact, though true in general, like most others, is however liable to exception; for the best milch-cows I ever had were polled, giving from 12 to 16 Scotch pints a day, with a proportionable share of butter; and they had also very little disposition to fatten. I had 5 generations in succession of the bulls of this breed, which were, in colour, the greater part white, with a few brown spots; and in size, at 30 months old, from 40 to 50 stone Amsterdam. They were esteemed by some farmers from Northumberland to be too thick about the shoulders; but it was from their being of a tender, delicate nature, that I gave them up, after having lost most of the cows, one after another, by sudden disease. I got them originally by means of a quey that was grazing in a common park, and came home in calf with the first, which turned out to be a polled bull. The quey herself was horned, and so were all the cows at home, at the time; but the progeny of them all, by this polled bull, turned out like himself, even to the very colour and shape, except it be the last, which I still have, by a horned cow of another breed, which, unlike the others, has got horns, though of a small diminutive size, and which hang over the brow, close into the hide.

6. The *Guernsey*, *Jersey*, and *Alderney* cows, are decidedly of the opposite quality to the generality of the polled, being in great estimation for milk alone, but of a small size and slender shape; they are of course not so well adapted to the taking on of beef. These are, however, not superior to the best, nor even to the middling breed of our own country; their excellency lying altogether in giving milk of a rich quality;

lity; but as there is less of it, (from 4 to 7 Scotch pints a day, yielding from 16 to 20 oz. of butter,) our own cows, which give as much butter, and double the quantity of milk, are surely of more value, and better worth the cultivating.

Could there be any well-distinguished marks in the calf, uniformly indicating the nature or disposition which, when grown up, it would have, it would be an easy matter to the breeder to rear only such as suited his purpose. I am afraid, however, that the knowledge of such circumstances is not very widely diffused in this county, if it is indeed known at all. From any observation that I have made with respect to milch-cows, I have found them good and bad, of all different shapes, sizes, and complexions, without a single circumstance to discriminate them, but one only, and even that not uniformly certain, which is the size of the neck, as all good milkers in general have the neck small. I have just now two, that in every circumstance, of colour, height, and shape, are as unlike to one another as a bull-dog is to a spaniel; but yet in respect to milk and butter, they are similar to a fraction; having frequently caused their milk to be measured, kept separate, and churned each by itself; and have always found the same quantity in both, viz. from 8 to 12 Scotch pints of milk, and from 20 to 24 oz. of butter in the day.

SECT. 2.—*Sheep.*

There being a great proportion of hill and moor in this county, several flocks of sheep are accordingly kept, but even these are not all natives, many being bought in from year to year, generally from Tweeddale. These are a small coarse woolled kind, the fleece seldom worth a shilling, and the carcass rarely weighing 12 lb. a quarter. In the lower parts of the county, a better kind, on some farms, has however been introduced, principally of the Cheviot breed; in some cases crossed with the Hereford, in others with the Bakewell species. These last, in particular, seem worthy of cultivation, as, besides giving a fleece of at least 4 times the value of the black-faced moorlanders, and rising from 15 to 25 lb. a quarter, they

they are now known to agree very well, both with the climate and the soil. It is believed, by intelligent people; that a much finer breed may be introduced, with advantage, on the greater part of the high-lying pastures of this county. Gala water in particular abounds in sheep walks, little inferior, if at all, to the hills of Tiviotdale. The present stock there, however healthy and valuable as moorland sheep, are far below the worth of the Cheviot flocks *.

SECT. 3.—*Horses.*

There may be about 5000 horses used here for the purposes of husbandry. Of these, not one half are of our own rearing, but have been purchased, from the shires of Linlithgow and Lanark. There may be about 600 required yearly to recruit this stock, of which, till very lately, 2-3ds were bought at an annual expence of at least 6000*l.* to the farmers here, which chiefly went into the pockets of the Clydesdale breeders. This, however, is but a small proportion of their sale; for, besides some which go to the north of England, there is, from many counties in Scotland, a constant demand for the draught horses of Lanarkshire; a durable active breed, esteemed among the best of the species in the Island.

Since 1784 the price of horses has rapidly advanced. The prime sizes, 16 hands and upwards of height, which at that time sold for 18*l.* or 20*l.* have gone as high as 30*l.* or 35*l.* The smaller kinds, from 14½ to 15½ hands, which include most

* While there is every reason to hope that the value of the fleece will be greatly augmented through the exertions of the Wool Society, an individual farmer has already shown how much improvement can be made in the single article of rearing early lambs for market. Mr BRODIE at Upper Keith, (a cold situation, at the verge of the Soutra hills,) has been distinguished for some years by his enterprise in that line, as he delivers generally 100 lambs before the end of February, for which he receives 20*s.* or a guinea each. It were to be wished that an accurate account of his practice were known. But it is in the province of the East-Lothian Survey to give this to the publick.

most of the plough horses, have not been so much sought after, so that their price has only risen from 12*l.* or 14*l.* to 18*l.* or 20*l.* On the whole, the prices seem to have risen to the level of the Mid-Lothian rents, from which, most of the farmers now endeavour to breed as many as will at least supply themselves, and may probably be able, in a few years, to rear some for the carriage and the saddle, for both of which there is such a constant demand in Edinburgh. Besides, from that spirit of emulation which at first accompanies any general undertaking, it may be hoped that the breed itself will be improved, and become of more intrinsic value, even although the price should fall, which it has indeed of late done, to the amount of 20 per cent.

In regard to the question about the comparative use of horses and oxen in husbandry, it seems to be very generally understood here, that horses are preferable, from being possessed of more active qualities, which enable the husbandmen, with them, to push forward their operations at a throng time, with a celerity that could never be attained with oxen. That these last are naturally fitted for the stall, by the time they become unfit for labour, (the strongest argument in favour of using them) is of less importance in this county, in which cattle feeding, as yet, forms but a small part of the business of a farmer.

SECT. 4.—*Hogs.*

Almost every farmer keeps one or two pigs to pick up any corn, &c. that may be scattered about the doors, but few people, except distillers, breed them to any extent. Pork and bacon are not yet relished as food by the common people; indeed to very fat meat of any sort, the Scots in general have an aversion. I believe three fourths of the lower ranks would rather starve than live on pork. Even among the gentry, it is not so generally used, as south of the Tweed. The demand for it in the Edinburgh market being very limited, the distillers are frequently under the necessity of salting and sending it to England, where pork is more agreeable to the
palates

palates of the people. Young pigs are, however, pretty much in request, selling for 3 s. or more, at 3 weeks old; and for 6s. or 7 s. at 6 weeks. Hogs are generally killed at the age of 8 or 10 months, the pork being esteemed more delicate than if they were kept a longer time. They generally weigh, at that age, 8 or 10 stone, and sell for 40s. or 50s. They are reared here on clover, lettuce, carrot, &c. in summer; in winter, on potatoes and yams, and are usually fed off, 2 or 3 weeks before killing, with oats or boiled beans.

SECT. 5.—*Rabbits.*

There are very few of these animals bred in the county, and indeed so little land adapted to them, that, in an agricultural point of view, they are of no importance whatever.

SECT. 6.—*Poultry.*

This has long been a favourite article with the Scots; and particularly here, where, from the vicinity to the capital, the market is so advantageous.

Geese, however, are not reared in any considerable numbers, as the demand for them is confined to particular seasons, and is never very great*. They are sold at 2s. 6d. or 3s. weighing 8 or 10 lb. The Edinburgh poultrymen frequently bring them down in harvest from Northumberland in hundreds, where they are bought at from 8d. to 10d. a piece. They send them to the corn stubbles to fatten, and at the end of the season dispose of them to the citizens for their new-year's entertainments.

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Turkeys

* The practice of plucking them periodically, as in England, is not used; probably the climate is too severe to admit of it, and as part of the profit is thereby lost, they are bred only by the gentry and farmers; the cottagers never attempt it.

Turkeys sell at from 4s. to 6s. weighing from 8 to 14lb. and are in much request at the tables of the higher ranks; but are not reared very extensively, as they are very delicate when young, and difficult to bring up.

Ducklings sell from 1s. to 1s. 3d. *Ducks* from 1s. 6d. to 2s.; the best kinds weigh from 6 to 7lb. These are the easiest reared of all poultry, and are the least destructive to the adjacent corns.

The common *dunghill-fowls*, (called here *hens*,) are the most profitable poultry, there being a constant demand for them in the market, and also for their eggs, of which there are great quantities collected and sold. The price of fowls varies from 1s. to 2s. 3d. according to size, and the season; and seems to be advancing much of late, to the great regret of the honest burghers, who are thus reluctantly abridged in their inclination to indulge in such delicacies.

The money drawn yearly by the peasantry of this county for poultry and eggs cannot be less than 8000l.

SECT. 7.—Pigeons.

Pigeons have long been a grievance, on account of the vast destruction they make among the wheat in the filling season. On the other hand, it is alleged, and I believe with reason, that they are very beneficial to the farmers in the winter, by picking up the seeds of weeds from off the lands. This matter might be compromised between the parties, by allowing the pigeons the free use of all the fields, except at the time the wheat is ripening, or still remaining in the field. I am fully convinced, that, in this county, there are annually 3000 bolls of wheat destroyed by pigeons, in the filling season alone, including what they cause to perish by treading it down; while all the profit arising from them to their owners does not amount to half that value the whole year round.

It is supposed there may be about 300 pigeon-houses in the county, who thus consume, or destroy, as much wheat as would, at an average, serve as bread to 3000 souls.

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SECT. 8.—*Bees.*

A few hives of these are to be met with over all the county, in gentlemens gardens, and perhaps in the kail-yards of country weavers, or other mechanicks; but they might assuredly be cultivated to a much greater extent. The ingenious BONNER, the Bee-master, who is at present residing in this county, will probably, by his exertions, both operative and literary * in this line, be the means of inciting a more general taste for this branch of husbandry, which seems, of all others, to intermeddle the least with any other department; requiring no more vegetable productions than what we already have, and but a very small portion of attention from the cultivators, whose exertions in this way, need hardly ever interfere with their other operations; besides, being a most rational mode of amusement, particularly to sedentary people, as well as conducive to their health. See the Appendix No. 10.

* He has published an ingenious Essay on the nature of Bees, and mode of management; which has gone through different editions, and has been so far approved of by the public, that already above 700 copies of the last have been sold. He has also entered into a contract with some gentlemen in Edinburgh, to carry on the bee husbandry mutually with them to the extent of 1000 hives and upwards; and has made choice of Roslin, in this county, for the situation of his apiary; where he now resides himself, and has got permission from several Noblemen and Gentlemen in that neighbourhood, to place his hives in any part of their land that he may think proper.

CHAPTER XIV.

RURAL ECONOMY.

SECT. I.—Labour.

THERE is perhaps no county in Great Britain better supplied with work-people than Mid-Lothian. A perpetual influx of the unemployed from the north pours into Edinburgh and its vicinity, which would have the effect to overstock the country with hands, were it not for the roving disposition of that description of people, who are ever in search of new employment, which, on the least lure to emigration, they are ready to abandon; leaving again to the native peasantry the full exercise of their respective occupations. It would, indeed, be no easy matter to dispossess the common people of this county of their stations; for so attached are they to the place of their nativity, that every where they are the oldest residents, surpassing in this respect both proprietors and farmers. It is, however, to be observed, (what is indeed there felt of this stationary and unambitious disposition,) that they are not the most expert in their particular professions. Hence labour, though at a seeming less rate, is really not cheaper here than in other places.

Servants.—A decent, orderly behaviour, is maintained by the country servants. The Sabbath with them is truly a day of devotion. No weather almost, can keep them from church, clothed in their best array; which, considering their wages, is wonderfully good. During the remainder of the day they keep themselves at home, reading their bibles; or, in many instances, they join together in family-worship. The frequent-
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ing of taverns on a Sunday is *almost unheard of* among them; hence, instead of that languor and sickness which prevents many a poor mechanick from earning his Monday's wages; that day, on the contrary, to the farmer, is the most profitable, his servants working with more alacrity and vigour than on any other of the week. They have always, besides, been laudably ambitious of giving their children a decent education, and would be ashamed if they could not at least read the English language. School-fees are indeed here extremely moderate. Reading is taught for 1 s. 4 d. the quarter; writing and arithmetick (in which the children of labourers are in many instances instructed,) at 2 s. 6 d. As the whole labourers employed in husbandry remain, with few exceptions, attached to the national church, much of this decent and virtuous disposition may be attributed to the attention of the established clergy; who, not satisfied with merely delivering from the pulpit the pure principles of Christianity, of which their own lives are exemplary patterns, are also at much pains, by frequent private visitation, to see that a proper regard to their spiritual instruction is observed. A few remains, however, of popular superstition are still to be traced; but these are on the point of being extinguished altogether. *Witches* and *fairies* have wholly disappeared: the *dead-knack* is now heard only by a few old women, who get very little credit from the discovery; while *Spunkie* (Will o' the Wisp,) is almost banished from the county for want of bogs and swamps wherein to exert his influence. The point in which the country people seem most credulous, is believing implicitly whatever is *printed*; and yet it is astonishing how little credit they gave to the writings of that jack-a-lantern Paine, and his bewildered followers. Even Lord George Gordon was very little respected among them, although he had the appearance of supporting the cause of religion, which has always been a favourite topic with the commonalty in this country; but even in this, as well as in points of political speculation, they are far exceeded in zeal by enlightened weavers, and other philosophical tradesmen and mechanicks.

They still, however, retain a great predilection for the cus-

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toms of antiquity, particularly on the occasion of a marriage or christening; at which the entertainment provided, and the various ceremonies observed, are conducted on a regular system of *etiquette* *; which, while they show the convivial spirit of the present race of the lower ranks, are perhaps representations of the ancient practice of those in a more elevated station †. At their marriages they often meet with a liberal contribution from those who attend ‡. Proprietors as well as farmers take this method of promoting matrimony, which generally brings to l. or 12 l. very seasonably to the new-wedded pair. From this also they are induced to behave well before marriage: while a bad servant meets with a poor contribution, a good one has been known to make 30 l.

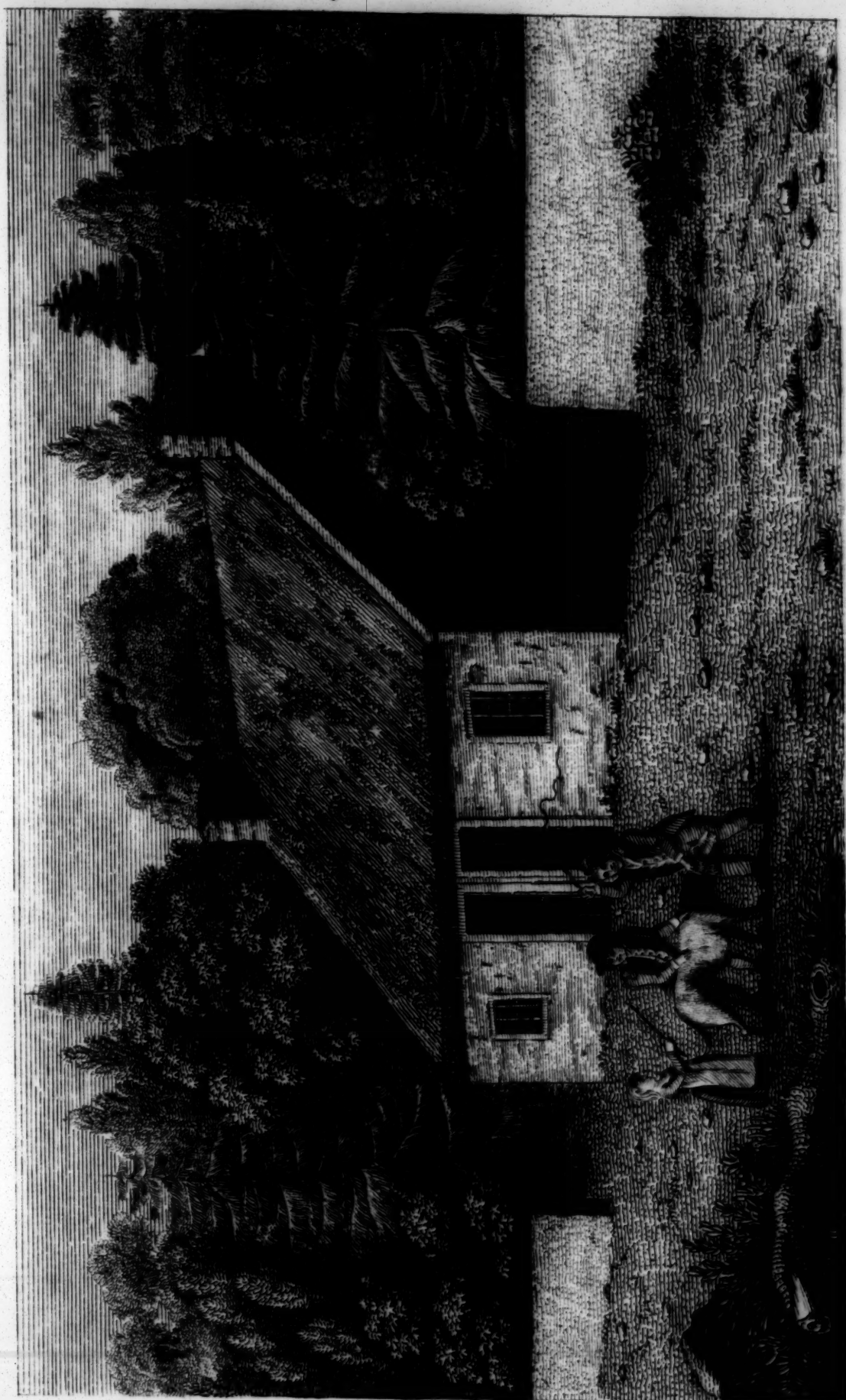
Their cottages are now constructed in a better style than formerly; they are larger, better lighted, and also warmer; (see *Buildings*.) Adjoining to these they have commonly a piece of ground, of two or three fells, (36 square yards each,) inclosed for raising pot-herbs. All of them have a few poultry, the produce of which brings them a good price in Edinburgh market.

Their furniture consists in general of two beds, a few chairs or

* Thus, at their marriages in particular, they have not only a *best-man*, and *best-maid*, but even a *master of ceremonies*, (*Master Household*, as he is called,) whose business it is to see that the company be properly arranged at dinner, &c. and who is commonly some facetious tailor, as a good deal depends on the humorous disposition of this office-bearer.

† The surnames of *Marshall*, *Moubray*, *Umphraville*, *Bisset*, &c. once pertaining to ancient Barons fallen into decay, are still very general among the lower orders here. Who knows but these very people may be the descendants of those illustrious families? It is at least ascertained, that the lineal representative of the great Moubrays, Dukes of Norfolk, is now a common labourer in the neighbourhood of Queens-ferry, not far from Edinburgh!

‡ Of all our ancient customs, none has maintained its ground so well as this practice of making *Penny weddings*, as they are called, for the behoof of the country servants; as it accords not only with a very proper regard towards them, but with the jovial inclination of the people in general, who enter into all the spirit of hilarity and merriment which arises from the occasion, still further inspired by the music and the dance which accompanies the entertainment.



MID-LOTHIAN COTTAGE.

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or stools, table, chest of drawers, cloathes press, &c. and they are all ambitious of having a time-piece, if it were only a cuckoo-clock. The whole may be worth from 10l. to 12l. Their clothing partakes of the improvement which has taken place in the different branches of that manufacture; being for the most part bought in Edinburgh, where is to be had great variety of stuff suitable to their circumstances, cheap and strong, also decent and becoming. In their Sunday's dress they make a very good appearance, and even pay attention to the fashion*. The old men still retain the *blue bonnet*, especially when they are in full dress. In the moorlands, where some old farmers still use this ancient ornament, they wear a *black bonnet*, to distinguish them from their servants.

In their food they still live in much the same simple way as their forefathers. Oat-meal forms the basis, or principal part of their sustenance. They have it regularly to breakfast and to supper, made into pottage, which they eat with a small allowance of butter milk. At dinner they eat it in bread, in addition to their *kail*; a kind of soup made of barley broth, intermixed with greens and other pot-herbs. To this they add at times potatoes, and fish of different kinds: seldom wheat bread, and still more rarely butchers meat. This mode of living, in which although with no great variety there is always abundance of food, seems to be very conformable to the natural constitution of the people, as they are found to go through their labour without feeling themselves fatigued, and enjoy a state of health which is very seldom interrupted. At an average, they are not above two days sick in a year†.

Labourers:

* The Sunday's dress of a young ploughman consists generally of a coat of blue cloth, at 5 s. 6 d. the yard; velveret vest, corduroy breeches, white cotton stockings, calf-skin shoes with black silk shoe-knots, shirt with ruffles at the breast, and a white muslin fringed cravat, hat worth 8 s. or 10 s. The shoe-knots and ruffles are indeed rather uncommon, but all the other articles are very much in use.

† There are several societies formed by regular contribution among the common

Labourers.—What is above stated refers chiefly to the condition of farm servants, who are hired by the year, and whose principal employment is about the horses, in the fields, or on the road. There is, however, another class of work people attached to a farm, who are hired by the day, or by the week, and whose employment is usually in jobbing about the barns, the fences, or the water-furrows. These are called Labourers, and in their circumstances and mode of living there is a considerable difference between them and the others.

Although their wages are in general at a higher rate than the hired servants, yet they make not such a good appearance in their dress, nor are so well seen to in their victuals, as these. They are generally, as we term it, *from hand to mouth*, always in want; which seems to arise principally from getting their whole wages in money, from week to week; which leads them continually to market, providing their daily sustenance; a province left generally to the charge of their wives, who, from this constant running about, get into habits of idleness, and want of attention to that good housewifery which is the glory of a decent cottager's wife. Hence tea-drinking, and other gossiping, which takes place among them: whilst the honest labourer, who supports the whole, is himself badly supported; for with a very indifferent covering from the blast, he is pinched in his food likewise, by the predilection which they have all got into for wheaten bread, which the wives, from time to time, provide for their tea, and which bread now forms the principal part of their sustenance; instead of a hearty meal of oat-meal porridge, and oat-meal bread, which the hired servants are provided in by their masters, sometimes (as at present) for half the expence. The great remedy for this evil would be, for the masters to
give

common people in different parts of the shire, for the relief of the indigent and sick. Mechanicks in general are the most inclined to enter into these associations: ploughmen very seldom think of becoming members. They are indeed such a healthy vigorous race, that such a scheme would very seldom be in their favour, unless restricted to their own class.

give every labourer 2 pecks of oat-meal weekly as part of his wages, in the same manner as he gives to the ploughmen, or hired servants.

Price of Labour.—A common ploughman, if married, as is the case in all the larger farms, lives in his own house rent-free, and receives for his board two pecks of oat-meal, and 6d. in money weekly; besides in harvest, so long as it lasts, his breakfast and dinner daily; gets also two pair of shoes in the year, and all his coals carriage-free.

His yearly wages in all will amount as under:

Paid in money, as fee or wages	- - -	L. 6	0	0
Ditto, as weekly allowances	- - - - -	1	6	0
Ditto for shoes	- - - - -	0	10	0
Six bolls and a half of meal, at 8 stone Amster-				
dam the boll, suppose at 1s. the peck	- -	5	4	0
House rent costs, or is worth	- - - - -	1	0	0
Harvest diet is worth	- - - - -	0	10	0
Carriage of coals, commonly 4 cart load of 16				
Cwt. each, worth	- - - - -	1	0	0
Total	- - - - -	L. 15	10	0*

Work by the Piece is always preferred by the farmer when he can get the work-people to do it, which is not yet common, our labourers not being in general very enterprising or speculative.

Land

* Thirty years ago, though the board allowance was nearly the same (being only 2d. less a-week,) the fee being 3l. without either harvest diet or free house, the wages in all were about 5l. less a-year. Principal servants receive 1l. or 2l. or, in some cases 3l. yearly more than the above.—Servant girls have 3l. in some cases 4l. yearly, and always live in the family. Boys in proportion to their ability. Day-labourers 1s. in winter; 1s. 2d. in summer: till lately, only 10d. and 1s.; 30 years ago, 7d. and 8d. Masons lately 1s. 4d. now 2s. Carpenters 1s. 8d. Women employed in the field, 6d. a-day; no board: in harvest they have board, and from 6d. to 1s. 6d. a-day, as it may happen, the rate at that time altering weekly.

Land is delved (dug,) at 3d. the fall, or 2l. the acre.

Corn was thrashed at 6d. the boll, but of late no labourer will undertake it so low, which has induced the farmers to erect threshing mills. See *Implements*.

Hedging and ditching is always done by the piece ; the rate according to the dimensions. See *Inclosures*.

Potatoes are taken up at 6d. the boll. One man to dig, and two girls to gather, take up 4 bolls or more a-day.

Turnips, potatoes, and every drill crop, are *hoed* by the piece ; the rate according to circumstances, from 1s. to 10s. the acre.

Hay is cut by the acre, from 2s. to 5s. according to the case ; 200 stone the acre (about 35 Cwt. the acre English,) can be done at 2s. and a man can in that case cut an acre a-day.

Hay is sometimes *made* by the piece ; 1s. should make 200 stone in a dry season.

Corn is seldom cut by the piece ; when it is, it is by the *stook* or *shock*, rather than the acre ; wheat at 1½d. equal to about 5s. the acre ; oats or barley at 1d. ; equal, the first to about 4s. 6d. the last to 5s. the acre.

Smith-work is always by the piece : horses are shod at 10s. or 12s. the year when the smith furnishes iron ; and at 2d. the shoe, and 1½d. each remove, when the iron is furnished by the employer. A new shoe to a horse is in some places 6d. in others 7d. all furnished by the smith. Cart-wheels are shod at 8s. or 10s. or at 1s. the stone weight, which will sometimes amount to 14s. the iron furnished by the employer. Plough-work is sometimes undertaken at a firlof (4 pecks) of oatmeal for each horse, including the shoeing of the horse ; the iron by the employer. In general, iron-work is furnished by the smith at 4d. the lb. coarse work ; and 5d. the lb. fine.

Labour commences at six in the morning, and ends at six in the evening, in summer ; and as long as there is light to work in winter, by all day-labourers ; but by servants hired by the year, at such hours as suit the master's convenience, and which in common are not much different from the above.

Servant-

Servant-maids in a farmer's family are employed at least 16 hours a-day.

SECT. 2.—*Provisions.*

This county, at all times, is well supplied with provisions, not merely from its own produce; but also from the Edinburgh markets, which attract the productions of the surrounding counties, and even of those at a greater distance, by sea as well as by land carriage. Among the several articles of food, the market is well supplied with butchers meat, (which was formerly less used than of late,) and generally on moderate terms, although it is still dearer in the winter and spring months, than during the rest of the year; a clear proof that the winter feeding of cattle is not yet carried to such an extent as the increasing demands of the country require.

The following account of the number of hides of cattle slaughtered for the Edinburgh market may serve to give some idea of the consumption of butchers meat in the capital of Scotland:

	<i>Oxen.</i>	<i>Calves.</i>	<i>Sheep.</i>	<i>Lambs.</i>
In 1775,	8,354	6,792	39,370	47,360
In 1790,	11,792	4,500	37,390	49,200

This is, however, exclusive of what is brought to the market by the country butchers, on 3 days of every week, as well as of what is killed in the town of Leith.

	<i>Oxen.</i>	<i>Calves.</i>	<i>Sheep.</i>	<i>Lambs.</i>
But in 1776, for Edinburgh and Leith together, there were killed, of	10,091	8,035	49,212	78,076
Hence Leith should seem to consume, (supposing Edinburgh the same as in 1775,)				
	1,737	1,533	9,849	30,716

From the above extract from the Statistical Account of Edinburgh, lately published, I shall here endeavour to calculate the quantity of butchers meat used altogether in the county. Supposing that, at an average, the oxen weigh

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28 stone, (16 lb. of $17\frac{1}{2}$ oz. each pound ;) the calves 3 stone ; the sheep $2\frac{1}{2}$; and the lambs $1\frac{1}{4}$ stone each ; hence in 1792, allowing Leith to consume the same quantity as in 1776, there would be used ;

	In Edinburgh.	In Leith.	In both.
Stones of Beef,	330,176	48,636	378,812
— Veal,	13,500	4,599	18,099
— Mutton,	93,475	24,622	118,097
— Lamb,	61,500	38,395	99,895
Add 1-10th for country butchers,	49,865	—	—
Stones of Meat, - -	548,516	116,252	664,768

If it be allowed, that in the rest of the county there is consumed as much butchers meat as in the town of Leith, then, to the consumpt of Edinburgh and Leith,

			Stones of Meat.
	- - -	- -	664,768
Add for the rest of the county,	- -	-	116,252
Total consumpt of the county,	- -	-	781,020

Suppose the price, at an average, thro' the year, of the different kinds to be $3\frac{1}{2}$ d. the pound weight, or 4s. 8d. the stone, the value of the above will hence be for meat,

	- - -	L. 182,238
To which add $\frac{1}{4}$ as value of hides and tallow,	-	45,559
Total value of cattle,	- - -	L. 227,797

No account could be obtained of the number of hogs and pigs used in the markets ; probably the value of these may amount to about,

	- - -	L. 7,500
Bolls of wheat consumed in bread annually, as before calculated, page 96,	- - -	144,540
which, at 22s. 6d. the boll, the average price for seven years preceding 1793, is worth,	- - -	L. 162,607
To this add 6s. each boll, as baker's allowance,	-	43,362
Total worth of bread,	- - -	L. 205,969

Sup.

Supposing there may be about 26,000 families in the county, and that each family, at an average, consumes 2 pecks of oat-meal weekly, (the allowance to a single farm-servant,) or $6\frac{1}{2}$ bolls yearly, *Bolls.*
hence the quantity used of oat-meal should be, - 169,000
This, at 15s. the boll, will be worth, - L. 126,750

Suppose each family to make use of, at an average, 1 Cwt. of pot-barley yearly, hence in all, *Tons.* - 1,300
Valuing this at 13s. 4d. the Cwt. total value, L. 17,333
Suppose pot-herbs used to be equal to the above, - - - - - L. 17,333

N. B. As it appears (page 132,) that there are about 500 Scotch acres employed in sale-gardens, (a fact pretty well ascertained) and supposing that the private gardens and kail yards employed in growing pot-herbs may amount to 500 acres likewise, which is probably near the truth, hence the produce of the whole may be moderately estimated at L. 17,333 as above.

The quantity of Malt made in this county, from 5 July 1793, to 5 July 1794, was as under :

	Winchester Bushels.
Edinburgh, Leith, and precincts, - -	205,600
Musselburgh and Fisher-row, - -	26,800
Dalkeith, - - - - -	16,300
Other parts of the county, - - -	32,300
Total, - - - - -	281,000

Supposing each bushel to produce of malt liquor to the value of 6s. hence the value of beer, &c. used in this county should be L. 84,300 annually, which is at the rate of 3l. 4s. 10d. yearly for each family, or $2\frac{1}{3}$ d. by the day.

N. B. Much malt liquor, porter in particular, is imported from England, and elsewhere. On the other hand, a considerable part of the above malt is used in the distillation of

of spirits, probably equal to what should be used in making the imported liquors.

Supposing each family to make use of milk and butter and cheese to the value of 1d. daily, which, although it may seem too moderate an allowance, is perhaps not far from the truth, as a great proportion of the people use still less than that proportion; therefore 26,000 families should consume yearly of these articles to the value of, - L. 39,541

The quantity of fish used must be very considerable, as the supply from the adjoining Frith is most abundant, particularly of herrings, which of late years are caught in vast quantities for several months together, in the winter; and altho^{ugh} much of them are salted up, and exported, or distributed in the neighbouring counties; yet it is probable, from the number of cart-loads of them sold fresh in Edinburgh and the vicinity, besides what are disposed of in burdens, that not less than 10 tons are daily consumed. To this add the quantity of other kinds of fish, and in particular those imported salt from other places, and the value may be moderately stated as equal to 1-6th of that of butcher's meat, or L. 31,639 yearly, while the price, at an average, will not exceed half the rate of the other.

The value of poultry and eggs may safely be estimated as equal to that of the fish, although, as articles of provision, they are probably at four times the rate; but, being chiefly used by the more opulent of the people, the lower orders are of course not much affected with this dearth.

The quantity of potatoes grown in the county has already been estimated (page 107,) at from 36,000 to 45,000 bolls. As there are a considerable quantity of these imported from other places, the consumpt may be stated at the highest of these numbers; and supposing the price 8s. the boll, at an average, (of 4 Cwt.) the value will be L. 18,000. The cheapest of all vivres, and the most applicable to the circumstances of every class of the inhabitants, as they admit of being prepared in so many different ways.

The

The total value of these enumerated necessities of life consumed in this county, will, according to the above conjectural estimation, be as under :

Butchers meat,	- - - - -	L. 189,838
Bread,	- - - - -	205,969
Oat-meal, in bread and pottage,	- - - - -	126,750
Pot-barley, and pot-herbs,	- - - - -	34,666
Beer and porter, &c.	- - - - -	84,300
Butter and milk,	- - - - -	39,541
Fish,	- - - - -	31,639
Poultry,	- - - - -	31,639
Potatoes,	- - - - -	18,000
Total		L. 762,342

Besides luxuries, such as fruits, foreign and native ; wines and spiritous liquors ; teas and sugars, and other groceries, &c. ; which it is probable are equal in value to the whole of the last six stated articles in the above enumeration ; hence making a consumpt of vivres equal to L. 1,002,127, and which is probably more than double the whole produce of the county, which should not appear surprising when the smallness of the territory is compared with the population.

The following Table of prices of grain and meal, will shew the progressive state of the price of these articles, from 10 years to 10 years, from 1645 to 1791, inclusive.

TABLE

TABLE OF MID-LOTHIAN FIARS, OF MEDIUM PRICES.

Years.	Wheat.			Barley.			Oats.			Oatmeal.			Pease.		
	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L
	s.	d.	s.	s.	d.	s.	s.	d.	s.	s.	d.	s.	s.	d.	s.
1655	22	2	7	18	4	13	16	8	11	9	1	13	18	4	3
65	18	4	11	15	1	11	10	10	8	5	1	8	9	7	4
75	20	6	9	16	1	10	13	10	7	6	7	8	4	7	5
85	18	4	10	20	1	11	13	10	7	6	10	8	14	7	5
95	15	4	9	14	5	10	11	3	7	6	2	8	13	7	6
1705	28	4	11	22	2	15	20	6	12	8	13	11	21	10	5
15	21	1	8	14	7	11	12	6	8	4	14	10	13	7	4
25	14	5	10	13	9	11	10	8	9	6	11	10	11	4	5
35	16	8	10	15	8	10	11	4	8	4	10	8	11	6	5
45	22	1	10	17	8	12	14	6	9	8	10	6	20	6	6
55	17	8	12	14	8	11	12	8	9	4	10	8	13	9	6
65	22	6	13	16	8	12	15	8	10	6	11	8	16	11	6
75	22	4	18	17	6	15	14	8	13	8	12	8	15	13	11
85	25	6	14	21	6	14	17	8	11	7	15	10	17	11	8
1791	23	11	19	18	3	15	14	4	12	6	16	12	16	12	10

Columns H show the highest rate of the best fiars; columns M, the average rate of the best fiars; and columns L, the lowest rate of the best fiars, for each period of 10 years preceding the respective dates in the column of years, except the last period, ending at 1791, which is for 7 years only.

The fiars are settled every year in March, by a jury of 8 landed gentlemen, and 7 traders, summoned by the sheriff for that purpose. Much wheat and barley are sold by reference to these medium prices, but in the low part of the county it is usual to get at least 5 per cent. above them*.

SECT. 3.—*Fuel.*

Pit-coal is chiefly used, there being inexhaustible seams of it in different parts of the county, particularly for five miles around Dalkeith. In some places of the moorlands, peat and turf are the principal fuel, being had in great abundance in the neighbouring moorlands.

The quantity of coal used by the common labourers is about 3-4ths of a ton for each soul in the family yearly, by farmers about two ton, and in families of the highest rank about six ton. The price at the pit is from 5 s. to 7 s. 6 d. the ton, according to its vicinity to Edinburgh. The quantity used in the county will be at least 200,000 ton yearly, part of which comes by sea, but an equal quantity to that goes from this shire to the more inland counties on the south.

* The 1st corn-act for Scotland was passed in 1663; by which it was lawful to export wheat when under 20 s. bear 13 s. 4 d. oats and pease 8 s. 10 d. 2-3ds, Sterling, the boll. The 1st bounty on exportation was allowed in 1695, being 10 merks Scots (8 s. 10 d. 2-3ds, Sterling) the chalders, or 16 bolls. The rate of labour, only 40 years ago, was not a half of what it is at present: and it is probable that, 150 years since, it was not a third part. The rent of land prior to 1650 was not a fourth part of what it is now, (see the very intelligent state of Cramond Parish, by Mr Wood,) from all which it must appear, that both the rent of land, and the rate of labour, have increased much more in proportion than the price of corn.

CHAPTER XV.

POLITICAL ECONOMY, AS CONNECTED WITH, OR
AFFECTING AGRICULTURE.SECT. I.—*Roads.*

BEFORE the establishment of turnpike duties for repairing the highways, (in 1714,) the roads here must have been in a wretched condition. Unfit for carriages even in the driest seasons, in wet weather they would be almost impassable, even on horseback. In fact, wheel-carriages for the purposes of husbandry were not then used*. Even in the neighbourhood of Edinburgh, till within these 40 years, hay and straw in trusses were carried to market on horseback, and dung was brought back in the same manner in bags.

The

* This fact having been controverted, has occasioned a particular inquiry to have been instituted more clearly to ascertain it, and from every information received from several old farmers, it turns out as represented in the text. One Gentleman, indeed, condescends almost on the very year that wheel-carts were introduced, his father being the first farmer that had to the extent of *two* in his neighbourhood, about six miles from Edinburgh, in the year 1728; and he is positive, that it was but a very few years before that time, that any farmer had *one*. From the Statistical Account of the Parish of Stow, in this county, it appears to have been as late as 1754, before wheel-carts were used in the district of Gala Water. In the account of the Parish of North Leith, it should seem that wheel-carriages for any purpose whatever were unknown in 1602. Till within less than 50 years ago, sledges were employed in dragging corn from the fields to the barn-yard, and sometimes in transporting goods to market. They are mentioned in a turnpike act in 1751, but in another in 1755 no notice is taken of them, from which it should seem that they had been laid aside about that period.

The farmers in more remote situations could not even aspire at this miserable mode of conveyance; for it was with the utmost difficulty that they could merely carry their few bolls of bear to town, a boll at a load, and return in the same day to their dismal habitations in safety.

Few counties now are better accommodated in roads than this, as adequate funds for their support have been provided. The great post-roads, which lead in every direction to Edinburgh, are generally kept in excellent order, so that the communication between town and country is accomplished with ease and expedition; as it likewise is from one part of the county to another, by means of the cross roads, of which there is an abundance in every proper situation; although in general they have been laid out originally too much in conformity to a straight line, without regard to the natural figure of the ground, which often presents steepes of a very difficult access, that might have been avoided by a more circuitous route, without even prolonging the tract, as the curve made in winding round the bottom of an eminence is seldom more extended than that which occurs in traversing it up and down in a straight direction. Much improvement, however, in this very point, has lately been made on many of the roads in this county*.

The turnpike roads are divided into districts, and the money collected in each is wholly laid out on its own roads. The management is vested in the country gentlemen. Every proprietor possessed of 100l. Scotch of valuation, and his heir-apparent, are entitled to act as trustees. These employ surveyors, labourers, &c. The following is the state of the funds, 4 Nov. 1788 †.

Actual debts,	-	-	-	L. 16,060	18	4
New debts proposed to be contracted	-	-	-	8,735	5	5
Total debts would then be	-	-	-	L. 24,796	3	9
	Z 2				Interest	

* The 10 great roads, with their branches, amount to about 175 miles. The cross roads above 200 miles; besides private roads to Gentlemen's seats, and farms, as measured from Armstrong's Map of the three Lothians.

† Extracted from the report of a committee of trustees at that time.

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Interest of ditto for one year	L. 1,239 15 2
Annual repairs according to surveyor's report	1,886 15 0
Contingencies allowed	810 9 4
Total annual expence would then be	L. 3,906 19 6
Annual revenue from the tolls was	4,545 0 0
Hence a sinking fund for paying off the debt	L. 638 0 6

This was not, however, supposed to be sufficient: a new act of parliament was applied for, which took place 15 August 1789, and will expire in 1835, in which the trustees are empowered to borrow to the extent of L. 27,300 and to raise the rate of toll one half, besides erecting new bars on roads formerly free. The revenue from the tolls was in 1794 L. 8019, of which L. 1505 arose from the new turnpikes on the post-road to Musselburgh. There were, however, some of the districts in which the rate of toll was the same as formerly, as it was found sufficient to keep the roads in proper order.

The cross-roads are on a different footing. They were di-joined from the others in 1784; and the ancient statute labour (first established in 1669,) or a composition in its place, allotted for their support. Each parish has the entire management of its own roads*. The landlords are the trustees here also; nor can it be vested in better hands, as they have

* This was an unlucky alteration, the investment by the Parochial Act is too limited, and the operations so of course. While that fund continued under the direction of the trustees for the turnpike roads, the money was regularly uplifted, and the chief objects were in general, the most useful and publick cross-roads; now it is very much otherways, the money of every parish is all laid out within itself, and not unfrequently on roads of a private nature, while the publick bye-roads leading across the county lie much neglected. No small part of that money has never been levied since the alteration took place, and some though levied not laid out.

have a permanent interest in their being kept in proper order. The assessment is laid on by the plough-gate, which in some cases is estimated at 45 acres, and in others, perhaps at 500, according to circumstances. The law authorizes a levy of 18s. on the occupier of the ground, but no more to be actually collected than what is necessary. Many parishes assess only at 12s. Supposing 15s. at an average, as there are 1170 plough-gates, the sum in all laid out on the cross-roads will be 877l. 10s. a-year. They are now coming fast into good order: the regulations, indeed, can hardly be made better than they are *.

SECT. 2.—*Canals.*

None in the county at present; but should the projected one from Edinburgh to Lanarkshire take place, it will be of inestimable advantage. (See page 28.)

SECT. 3.—*Fairs.*

The fairs in this county are, Edinburgh Hallow-fair, beginning on the second Monday of November, in which for two days

* The art of road-making seems now to be better understood. It was at first the practice to gather them high up into a narrow ridge, and lay them with the greatest stones that could be found. They are now made much wider, more flat, and the stones broken into small pieces. There are inexhaustible materials for this purpose all over the county,—rotten-rock, gravel, whinstone, &c. The first duties levied for the support of the roads, before the Union, were appointed by the Privy Council of Scotland, and amounted only to 1-6th of a penny on a loaded horse, &c. The first British act of Parliament passed in the 12th of Queen Anne, and there have been other four acts since, in which the duty has been gradually raised to its present rate of 1½d. a saddle-horse, &c.

One remarkable circumstance occurs in the original establishment of these turnpike duties:—Riding horses, and coaches, &c. were altogether exempted; the whole being levied on pack-horses, carts, &c. Yet this took place at that precise era when persons are idle, or wicked enough, to endeavour to persuade us, that our constitution was then more favourable to the rights of the people than at present.

days are to be seen considerable numbers of cattle and horses; as are also at Mid-Calder on the 2d Tuesdays of March and October, and at Dalkeith on the 3d Tuesday of that last month.

SECT. 4.—Weekly Markets.

Edinburgh is the great place of sale, for this, as well as for several of the surrounding counties. On Wednesday is the principal market: cattle being sold in the morning; oats, beans, and pease, at eleven o'clock; and horses in the evening:—on which different accounts there is a numerous concourse of farmers and country-people to town. There is a market for sheep thrice a week; for meal once*, and for straw every day. Hay is sold privately; also wheat and barley; there being no particular place allotted for the sale of these articles. Potatoes, greens, &c., are sold from street to street; but there are particular stands, where retailers, who buy them in wholesale from the farmers, sell them out in small quantities to the public. Every article of country production finds a ready sale here†.

Dalkeith markets are esteemed, I believe with much justice, amongst the best in Scotland. The market for meal‡ upon Mondays, and likewise for wheat and barley, (but these last sold only by sample.) For fat cattle and sheep on Tuesdays,

* About 200 bolls weekly are brought to market, one half of which from the counties to the south; but this is not above one fourth of what is sold at Edinburgh in private shops. The chief use of this market is to regulate the weekly price: A boll of meal is 128lb. Amsterdam weight.

† The duty, or *custom*, collected at these markets forms a considerable branch of the revenue of the town. An objection has lately been made on the part of the farmers, who state that there have been encroachments made by the collectors beyond what the city-charter bears. An action at law has been the consequence, and the decision at present is given against the borough.

‡ There are nigh about 400 bolls brought weekly to market, which goes mostly for the supply of Edinburgh, and to the west country, about Lead Hills, &c. There is about the same quantity of oats, or more, but little wheat or barley.

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days, (during 4 months in the year, commencing in January.)
For oats, beans, and pease, on Thursdays.

SECT. 5.—Commerce.

In 1784*, the trade of Leith was estimated at *near* half a million Sterling, according to the following statement:

8 Traders, or Companies, dealing in flax, hemp, iron, ashes, tar, &c.	- - -	L. 160,500
10 ditto, in wood,	- - -	32,000
10 ditto, in teas, spirits, and groceries,	- - -	65,000
9 ditto, in wine and spirits, hops, &c.	- - -	36,500
8 ditto, in grain, by consignment or purchase,	- - -	161,000
2 manufactures in soap and candles,	- - -	13,000
Rope-works; raw materials, L. 12,200, labour, L. 14,800, <i>in toto</i> ,	- - -	27,000
Total,		L. 495,000

Grain imported by the above 8 traders in that article.

Wheat,	-	about 60,000 bolls,	-	worth, L. 66,000
Oats,	-	100,000	-	65,000
Barley,	-	20,000	-	21,000
Pease,	-	10,000	-	9,000
Total,		190,000 bolls,	-	L. 161,000

Ships cleared at the custom-house in 1784.

From foreign ports,	- - -	247
With coals,	- - -	361
Coasters,	- - -	782
In ballast,	- - -	384
Total,		1774

* See the Statistical Account of Scotland, Vol. VI. page 569.

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From the 13th of November 1786, to the 13th of November 1787, there arrived in Leith harbour the following vessels :

	Foreign.	English.	Scotch.	Total.
Ships,	—	17	10	27
Brigs,	11	22	92	125
Sloops,	19	282	1407	1708
Tons,	3244	26,170	75,809	105,223

During the same period, there came into Leith harbour, from ports within the frith of Forth, 383 vessels with coals, measuring 14,956 tons, and the same number of vessels with other goods, measuring 16,139 tons.

In 1794, the following was the state of commerce in Leith :

Registered tonnage,	15,504
Ships,	144
Men employed,	854

N. B. The greater part by much of these men are obtained from the neighbouring towns in the three Lothians, Fife, &c. few comparatively residing in Leith. It is also to be observed, that a considerable tonnage belonging to other ports in Scotland, and the north of England, is also employed in the trade of Leith, particularly in importing goods from the Baltic, and in corn and coals, &c.

IMPORTS.

	Wheat.	Barley.	Malt.	Rye.	Oats.	Pease.
Coastways,	48,410 $\frac{3}{8}$	33,067	8872	206	10,587	—
Foreign,	2,872	1,494	—	—	4,659	62

Total of quarters, 110,229 $\frac{3}{8}$

	Scotch.	English.
Coals,	30,399 $\frac{7}{10}$ tons,	310 chaldrons.

In 1763, the shore dues at Leith were . . . L. 580

In 1783, 4000

SECT.

SECT. 6.—*Manufactures.*

Although Edinburgh has been chiefly distinguished for being the seat of the superior courts of law, for its celebrated university, and for the general resort of the nobility and gentry of the northern part of the united kingdom; it is also, with its surrounding county of Mid-Lothian, of considerable importance in the line of manufactures.

In *Leith*, the glass manufacture has been established above 150 years, and is at present under two companies. The oldest, the *Edinburgh*; and the other, the *Leith* Glasshouse Company.

At present, the capital employed in this manufacture may amount to L. 60,000. The number of people, from 400 to 500, who earn from 21s. to 30s. weekly, each; and there is paid to Government, from L. 15,000 to L. 16,000 yearly of duties, and consume about 15,000 ton of coals. It is under the first reputation as to quality, in the different branches of *bottle-glass*, *flint*, and *window-glass*; inasmuch that, instead of a great import to serve the country, as formerly, there is now a considerable exportation, notwithstanding of the very extensive demand which, (from our more luxurious style of living,) there now is for that ornamental article in household utensilry, and elegant decoration.

Rope Manufactory. There are two principal rope and sail manufactories also in this town; the oldest under the firm of *Leith Roperie Company*, which, from the best information I can obtain, commenced about a century ago, upon the North side of the links of South Leith, where the works are still carried on.

There was another manufactory of these articles carried on for a number of years upon the links of Newhaven, but which ground is now entirely washed away by the sea within these 40 years. This Company afterwards joined the Company in the South side, as already mentioned, under the firm of *Leith Roperie Company*.

About years ago, another rope and sail manufactory commenced, under the firm of Edinburgh Roperie Company: the ground they occupy is in the South, and immediately joining the Leith Roperie Company. Both Companies carry on the making of canvas, cordage, sails, &c. which are found to be equal in quality to the best made in Britain, and as a proof of which they always obtain the highest prices of any in the island. There are also a few individuals in the same branch of business, but whose speculations are not carried on to any considerable extent.

The capital employed in this branch of business in Leith may amount to about L. 40,000. It is not easy to ascertain the number of people employed in making of cordage and sails; but they earn, each, from 12s. to 20s. weekly. These companies import the raw materials themselves, seldom having occasion to purchase in retail from merchants.

Soap Manufacture. There are two hard soap manufactories in Leith; the one under the firm of Anderson and Cundell, which employs from seven to eight men, whose wages are from 9s. 6d. to 10s. 6d. weekly, and which uses from 30 to 40 tons of coal, and pays from L. 3000 to L. 5000 of soap duty per year. The other soap house is under the firm of Jamison and Paton, and is very completely fitted up for an extensive trade, it being one of the largest soap-houses in the kingdom, having seven hard soap pans, some of which are 14 feet deep, and 14 feet wide, of boiling contents; and from 44 to 46 vats, &c. from 7 to 8 feet wide, and from 2 feet 6 inches to 2 feet 9 inches deep, most of which are cast iron, with the same number of receivers below ground, of the same metal. In this house are likewise employed six pans, or boilers, for evaporating waste or spent lees, which are very large, with two air furnaces; here is also burnt all the lime used in this manufactory, in a kiln on a new construction, which seems to be a very great improvement on the quality of the lime wanted for that purpose, but of the nature of which I am not fully informed. The quantity of coal used here is from 1400 to 1500 tons annually, and there are employed from 40 to 50 labourers, whose wages, each, are from 9s. 6d. to 12s. per

per week: from 21,000 to 22,000 pounds Sterling of duty is paid per annum. This house began business in 1777, and has also a very extensive soap manufactory in London, which commenced in the year 1789*.

Ship-building. In North Leith there are five master ship-builders, who employ about 152 carpenters, whose wages are about 1s. 10d. a-day each. There have been two dry docks erected within these 16 years, one of which lets at L. 130 per annum; the other is still more valuable, and is in the possession of the proprietors. (*See the statistical account of this parish.*) There is also a card manufactory, that has long been in great reputation; and of late, a manufactory for extracting silver from lead, which was formerly sent to Holland, but is now found to be done to very good purpose here. A carpet manufactory is likewise in a very flourishing situation.

Such are the principal subjects of manufacture established in Leith. In other parts of the county, the following short statement of them is principally extracted from the statistical account of the different parishes.

In *Cramond* there are iron-works by Mess. Caddel and Eddington, capital L. 30,000; 3 forges, 2 slit mills, and 2 steel furnaces, in which are manufactured, square, blistered, and German steel; hoops, rolled and rod iron; boiler and pan plates for fire-engines, sock moulds, anchor palms, bolts for ship-building, and other articles. Thirty men and boys employed, who earn each, from 4s. to 26s. weekly. A spade and nail manufactory belongs also to them; 450 Cwt. of nails and one thousand dozen of spades made annually; also files; fifty men and boys employed, who earn from 3s. to 20s. per week, each. Steel is exported from this to India; the German sells as high as 56l. the ton. The greatest part of the rod iron is sent to Stirlingshire, where this Company

A a 2

employs

* The above account of the rope and soap manufactures was communicated by a friend.

employs two hundred men to make it into nails, of which great quantities used to be exported to America. Above 1000 tons of iron are imported here from the Baltic yearly, the average cost per ton was from 17l. to 18l. 10s. but has risen so much of late, as to induce the proprietors to erect furnaces on the Clyde, near Glasgow, in view of supplying themselves at home. The Cramond works consume about 1600 tons yearly of coals, at about 8s. 6d. the ton, from Borrowstounness. The forge hammers weigh from four to six cwt. each, are wrought by water, and make from 120 to 160 strokes in a minute.

Currie. A paper-mill, perhaps the most extensive on one fall of any in the island. The annual wages earned in this work is from L.1000 to L.1200; it has increased the population 200. Children from 10 to 12 years of age are employed, also old people.

Stow. A cloth manufactory to a small extent, only L.150 worth fold, besides Stow-struntain, a species of inkle.

Cranston. A brick-work and pottery; COAL TAR, in the different processes of which are manufactured, *an oil and volatile spirit; half pitch; tar; hartshorn; bright-varnish; black-varnish:* and *cinders* or charcoal.

Pennyquick. A cotton-mill that employs 500 hands, also two paper-mills.

Laswade. Five paper-mills, 260 people employed, who circulate L.3000 yearly; 300 tons of rags used, and L.1800 of duty paid. Great improvements making in the operation.

Dalkeith. A tannery, a soap-work, and candles, which have acquired a high character. A tambour work, erected by Mr RUFFIN in Feb. 1790; 110 girls and 4 boys employed as apprentices, at 2s.; 2s. 6d.; and 3s. weekly each; a manufactory of the same kind at Musselburgh, where 22 apprentices were bound on the same day. This branch was first introduced

duced in 1782, and has now increased so much as to employ (it is said,) 30,000 young girls in Scotland.

Inveresk. Some cloth made, and a manufactory of Manchester stuffs, which seems to be doing well. A thriving stone-ware pottery, and a pottery for brown ware. Several soap-boilers, and starch-makers; one, lately given up, paid 4064 l. 13 s. 4 d. of Excise duty yearly. A great distillery, 13,131 bolls of barley made into malt, consumed in one year; in which were 600 cattle fed off twice a-year, besides many hundred hogs. Beer and ale decreased; there being only 1460 bolls of barley made into malt for that purpose. There are two salt-pans in this parish, in both of which great quantities of salt are made.

Temple. A gun-powder mill lately erected there, the first in Scotland.

Glencrofs. One distillery; but this, as well as several very flourishing distilleries in other parts of the county, are now under a temporary suspension. When the state of the crop will admit of them being employed, they are, on many accounts, highly beneficial to the country in general, but more especially to the districts in their immediate vicinity.

In the city of Edinburgh, and surrounding suburbs, there are many manufactories established in various branches. Thus the iron-foundry of Cooper and Barker on Leith Walk, and others; cast-iron, which was formerly imported, is now exported in great quantities.

Coaches and chaises are constructed as elegantly in Edinburgh as any where in Europe; and it may be added, stronger and cheaper. Many were yearly exported to Petersburg and the cities on the Baltic; and there was, in 1783, an order from Paris to a coach-maker in Edinburgh, for one thousand crane-necked carriages to be executed in 3 years. This trade has since greatly increased.

The manufacture of starch and hair-powder was, till of late, carried on in this county to a great extent. *See the miscellaneous*

neous table for this, and several other articles of manufacture, &c. &c.

SECT. 7.—*Poor.*

The supply for the poor in this county is far from being liberal ; as may be seen from the following Table of the funds, from which they are provided in the different parishes of the county, not including Edinburgh, of which the accounts could not be obtained. The whole is extracted from the Statistical Account of Scotland, lately published, in which it is to be premised, that in cases where the information was either defective, or not sufficiently clear, it is supplied from conjecture, according to the inferences drawn from the general account, or from the average of parishes, in similar circumstances.

STATISTICAL

STATISTICAL TABLE, N^o. I.*Provision for the Poor.*

Parishes.	Num- ber.	Amount of yearly collec- tions and dues.			Yearly assess- ment.			Interest of funds.			Total.		
		£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
Borthwick,	23	15	15	5	31	14	7	2	10	0	50	0	0
Canongate,	96	192	0	0				100	0	0*	392	0	0*
Carrington,	12	7	8	0	16	0	0				23	8	0
Cockpen,	11	13	16	9*							13	16	9
Colinton,	18*	16	0	0*	10	0	0*				26	0	0*
Corstorphin,	22	21	0	0				10	0	0	31	0	0
Cramond,	57	46	0	0				56	0	0	102	0	10
Cranston,	17	12	3	0*				17	17	0	30	0	0*
Crichton,	20*	25	0	0*				5	0	0*	30	0	0*
Currie,	29	25	0	0				25	0	0	50	0	0
Dalkeith,	50	64	6	0	95	0	0	30	0	0	189	6	0
Duddingston,	22*	21	0	0*				10	0	0*	31	0	0*
Fala,	4*	2	12	0							2	12	0
Glencross,	2	4	4	0*				0	16	0	5	0	0*
Herriot,	none												
Inveresk,	110	65	0	0	150	0	0				215	0	0
Kirknewton,	12	21	12	0*							21	12	0
Lalswade,	50	50	0	0				16	13	4	66	13	4
Leith, South,	150†	150	0	0				150	0	0*	300	0	0*
Leith, North,	60	100	0	0							100	0	0
Libberton,	70*	64	0	0				66	7	4	130	7	4
Mid-Calder,	19	50	0	0*							50	0	0*
Newton,	14	42	0	0*							42	0	0
Newbattle,	20	34	0	0							34	0	0
Pennycuik,	21	28	0	0*							28	0	0
Ratho,	40	45	0	0	25	0	0				70	0	0
Stow,	28	5	0	0	48	0	0				53	0	0
Temple,	16*	14	13	10 $\frac{1}{4}$				9	9	0 $\frac{3}{4}$	24	2	11
West-Calder,	20*	50	0	0							50	0	0
West-Kirk,	287	363	3	2 $\frac{1}{4}$	500	0	0	102	1	1 $\frac{1}{4}$	965	4	6 $\frac{3}{4}$
Total,	1300	1548	14	2 $\frac{1}{2}$	875	14	7	701	14	1 $\frac{1}{4}$	3126	2	10 $\frac{1}{4}$

* Stated from conjecture, no precise account having been given.

† Besides a very great number who receive occasional supply.

‡ Value of the work done in the workhouse.

|| See the account of the charity workhouse in the next page.

Answer

Answer to Queries proposed by Mr GEO. ROBERTSON.

West Kirk Charity Workhouse.—The rate of the assessment rises and falls with the price of provisions, and the number of paupers. For some years previous to August 1792, it was four-pence upon the pound of free rent per ann. For the three ensuing years it was reduced to three-pence per pound; when the sum collected each year amounted to, from August 1792 to August 1793, L. 495; from August 1793 to August 1794, L. 495; from August 1794 to August 1795, L. 500. For the year included betwixt August 1795 and August 1796, the rate fixed by the heritors is four-pence halfpenny per pound.

The average number of poor in the house from August 1792 to 1793, 169; from August 1793 to 1794, 193; from August 1794 to ditto 1795, 200; and at present, the number is 32 men, 38 boys, 124 women, and 43 girls. Total 237.

The collections at the doors of the West Kirk and Chapel of Ease taken together have been, for ten or twelve years past, from L. 260 to L. 270 per ann. These, together with the dues on baptisms, burials, marriages, &c, have been,

For the year preceding August 1793,	-	-	L. 359 12 9 $\frac{1}{4}$
Ditto,	-	-	1794, - 368 16 9 $\frac{1}{4}$
Ditto,	-	-	1795, - 363 3 2 $\frac{1}{4}$

The old men in the parish are found capable of supporting themselves longer than the old women; but when they come into the workhouse they are commonly so frail as to be unable to work at any thing. If a weaver, strong enough, happens to be in the workhouse, he has a loom, on which he weaves the shirts and sheets; a tailor makes the cloathes that are necessary; a shoemaker mends the shoes; a wright keeps the furniture in repair; and others find employment in the garden belonging to the house, and so on. The women spin lint, tow, or cotton; make each others shirts or stockings; also take care of the sick, keep the children, clean the house, or wash the clothes, &c. according as their ability or qualifications fit them. Before the

the children were sent to Lanark cotton mills, which took place several years ago, they were employed, when out of school, in spinning of wool, of which the coats, &c. were made.

The value of the work done in the house for the last three years is as follows, viz.

August 1793,	-	-	-	-	L. 63	16	7 $\frac{1}{4}$
August 1794,	-	-	-	-	91	12	11 $\frac{1}{4}$
August 1795,	-	-	-	-	102	1	4 $\frac{1}{2}$

It is to be observed, that the produce of their work depends much on the general state of their health; and the value of the labour of those who are employed about the sick, and the children, &c. are never estimated.

Breakfast and supper uniformly consist of pottage made of the *best* oatmeal; to which they are allowed half a mutchkin of good small beer brewed in the house; or if they disagree with that, half a mutchkin of sweet milk is given in place of it. During summer, butter milk is provided for the children. Dinner consists of broth made of barley, groats, (hulled oats) cabbage, or greens, and onions or leeks. To this they have a loaf weighing eight ounces, made of *whole* flour, when the wheat is cheap; otherwise, of oat-meal mixed with paring meal, or with barley-meal, or with pease meal, as may be thought best at the time. Such is their diet the whole year round.

There are no out-pensioners but such as disease, or some other cause, renders it dangerous, or impossible to remove into the house, and infants at nurse. The latter, since the commencement of the present war, have increased to three times their former number. They amount at present to 25 or 26. Besides cloathes, L. 1. per quarter is allowed for nursing them.

With respect to the former, there is an infinite diversity in their circumstances, requiring a corresponding difference in the sum allotted them. At an average, they receive each two shillings and eight-pence, or two and nine-pence per month; and their number, which is perpetually varying, amounts at present to twenty-five or twenty-seven.

Schools.—This being a subject connected with landed property, and the people at large, the following Table, relating to the Parochial Schools in this county, has also been compiled from the Statistical Account of the different Parishes. But as some of these accounts are not yet published, and in others that are published the information on this subject is defective, therefore the supply is made from probable conjecture, respecting those taken notice of in the table, and respecting the others is calculated from the proportion of the valued rents.

STATISTICAL TABLE, N^o. II.

Schoolmasters, Salaries, &c.

Parishes.	No. of Scholars	Salary.			Perquisites.			Total.		
		£.	s.	d.	£.	s.	d.	£.	s.	d.
Borthwick,	30	5	3	5 $\frac{1}{2}$	12	0	0	17	3	5 $\frac{1}{2}$
Carrinton,	20	5	11	1 $\frac{3}{4}$	4	8	10 $\frac{2}{3}$	10	0	0
Cockpen,	20*	7	1	0	4	9	0*	11	10	0
Corstorphine,	40*	9	0	0	12	0	0	21	0	0
Cramond,	50*	15	4	8	*15	0	0	30	4	8
Crichton,	75	5	11	1 $\frac{1}{3}$	24	8	10 $\frac{2}{3}$	30	0	0
Currie,	45	12	0	0*	18	0	0*	30	0	0
Fala,	15*	2	4	4	7	15	8*	10	0	0
Herriot,	10	5	11	1 $\frac{1}{3}$	2	8	10 $\frac{2}{3}$	8	0	0!
Kirknewton,	45	14	0	0	*12	0	0	26	0	0
Laffwade,	60*	16	0	0	20	0	0	36	0	0
Libberton,	45*	16	4	5 $\frac{1}{3}$	*13	15	6 $\frac{2}{3}$	30	0	0
Mid-Calder,	70*	10	0	*	21	10	0*	31	10	0
Newton,	48	8	6	8	15	13	4	24	0	0
Newbattle,	45	13	0	0	10	0	0	23	0	0
Ratho,	50*	13	3	0	*16	17	0	30	0	0
Total,	668	148	0	10 $\frac{10}{12}$	210	7	2 $\frac{2}{3}$	368	8	1 $\frac{1}{2}$

Estimating the parishes not inserted in this table, in proportion of their respective valued rents, it should appear, that the
total

* Conjecture.

total salaries of schoolmasters in Mid-Lothian, excluding Edinburgh and Leith, should be about L. 325, and their fees and perquisites about L. 432, in all about L. 757, which, for 27 parish schoolmasters, amounts to about L. 28 each per annum.

Stipends.—In order more fully to shew the burdens affecting land in Mid-Lothian, the following Table of the Stipends of the Clergy is likewise added, being collected, like the others, from the Statistical Account of the different Parishes.

STATISTICAL TABLE, N^o. III.*Ministers Stipends.*

Parishes.	Money.			Wheat.	Barley.	Oats and oat meal.	Glebe.	Total.
	£.	s.	d.	B. F. P.	B. F. P.	B. F. P.	£. d. s.	£. s. d.
Borthwick,	100	3	10				15 0 0	115 3 10
Canongate, 1st.	99	0	0	17 0 0	17 0 0	17 0 0	25 0 0	170 6 6
Ditto, second.								
Carrinton,	38	6	8		32 0 0	32 0 0	7 10 0	97 0 8
Cockpen,	95	0	0				10 0 0	105 0 0
Corstorphin,	77	9	1 $\frac{1}{3}$	16 0 0	41 0 0	31 0 0	18 0 0	171 8 7 $\frac{1}{3}$
Cramond,	58	5	0	10 0 0	44 2 0	41 2 0	12 10 0	150 0 6
Cranston,	57	6	11 $\frac{1}{3}$	2 0 3	16 0 2 $\frac{1}{4}$	32 0 1 $\frac{1}{4}$	7 10 0	104 13 8
Crichton,	45	0	0		60 0 0	52 0 0	7 10 0	142 14 0
Currie,								100 0 0
Dalkeith,	95	0	0				15 0 0	110 0 0
Fala,	37	12	7		20 2 0	14 2 0	5 0 0	78 6 7
Glencroft,	35	8	1		10 2 2	17 2 2	10 0 0	67 9 7
Herriot,	55	11	1 $\frac{1}{3}$				14 0 0	69 11 1 $\frac{1}{3}$
Inveresk,	62	0	0	32 0 0	48 0 0	48 0 0	13 15 0	188 11 0
Kirknewton,	48	0	0		52 2 0	52 2 0	10 10 0	142 10 0
Lalswade,	70	16	5 $\frac{1}{4}$		26 1 0 $\frac{1}{2}$	44 0 0 $\frac{1}{2}$	10 0 0	135 14 10
Libberton,	23	11	3 $\frac{1}{3}$	21 3 2 $\frac{1}{2}$	50 0 0	63 0 0	10 0 0	147 13 4 $\frac{1}{3}$
Mid-Calder,	95	0	0				10 0 0	105 0 0
Newton,							18 0 0	124 0 0
Newbattle,	60	0	0	8 0 0	24 0 0	24 0 0	12 0 0	119 8 0
Pennycuik,	78	3	6 $\frac{1}{2}$				11 0 0	89 3 6 $\frac{1}{2}$
Ratho,	58	8	6				10 0 0	130 0 0
Stow,	70	0	0		16 0 0	32 0 0	5 0 0	112 4 0
Temple,	82	16	8*				5 0 0	87 16 8
West Kirk, 1st.	2	12	6	20 0 0	141 0 1 $\frac{1}{2}$		14 11 7	163 3 3
Ditto, second.	2	16	8	20 0 0	140 2 2		14 11 7	162 19 2 $\frac{1}{2}$
North Leith,	80	0	0					140 0 0
S. Leith, 1st.	58	6	8		80 0 0			128 6 8
Ditto, second.	127	16	6					127 16 6
Total,	1714	10	11 $\frac{1}{2}$	147 0 1 $\frac{1}{2}$	320 1 4	511 0 3 $\frac{3}{4}$	291 7 2	3586 1 11

To this add, for Colinton, Duddingston, and West-Calder, not yet published, as according to the average of the others, - - -

371 11 9

Total, L. 3957 13 8

which is at the rate of 123l. 17s. 3d. each, estimating the victual stipend thus, wheat 22s. 6d. barley 17s. 6d. oats or oat meal 14s. 6d. being

* Including grain at the old conversion.

being about the average of the medium prices for seven years preceding 1793.

The stipends of the ministers of Edinburgh, 16 in number, is just £. 200 each, and one assistant £. 70. In Lady Glenorchy's Chapel the senior minister has £. 170, the junior, £. 140. In the Chapel in New-Street, Canongate, the minister has £. 100. In the Chapel of Ease, in St Cuthbert's, and that in Leith Wynd, the stipend arises from the seats. All these are in communion with the established church, and more money is collected at Lady Glenorchy's Chapel for the poor, than in any church in Edinburgh, St Andrew's excepted.

Having now seen the extent of these three establishments as affecting the soil of this county, I shall here bring them into one point of view, as a burden (not on the Proprietors, but like an heritable debt) on the land itself, being transferred with it in all exchange of that species of property.

	£.	s.	d.
1. Ministers stipends, exclusive of their glebes, -	3660	0	0
2. Schoolmasters salaries, - - - about	325	0	0
3. Assessment for the poor, - - - about	875	0	0

Total parochial burdens, - - - L. 4860 0 0

But the total funds for supporting these establishments will be as under :

The Clergy, - - - -	L. 3957	13	8
Schoolmasters, - - - -	757	0	0
The poor, - - - -	3126	2	10
	L. 7840	16	6

N. B. The city of Edinburgh is not included in the above respecting any of these particulars, nor Leith with respect to school salary.

SECT. 8.—Population.

The following extract from the Statistical Account of the different Parishes, will exhibit not merely the number of the people, but the remarkable increase which has taken place in the short period of 38 years.

STATISTICAL

STATISTICAL TABLE, N^o. IV.*Population.*

Parishes.	In 1755.	In 1793.
Borthwick,	910	858
Canongate,	4,500	6,200
Carrinton,	555	329
Cockpen,	640	1,123
Colinton,	792	
Corstorphin,	995	1,037
Cramond,	1,455	1,340
Cranston,	725	839
Crichton,	611	900
Currie,	1,227	1,300
Dalkeith,	3,110	4,366
Duddingston,	989	
EDINBURGH,	31,112	31,898
Fala,	312	372
Glencrofs,	557	385
Herriot,	209	300
Inveresk,	4,645	5,392
Kirknewton,	1,157	812
Lasswade,	2,190	3,000
Leith, North,	2,205	2,409
Leith, South,	7,200	11,432
Libberton,	2,793	3,457
Mid-Calder,	1,369	1,251
Newton,	1,199	1,135
Newbattle,	1,439	1,295
Pennycuick,	890	1,721
Ratho,	930	825
Stow,	1,294	1,400
Temple,	905	593
West-Calder,	1,294	
West Kirk,	12,168	32,947 *
Total,	90,377	118,916
Add for the 3 parishes not yet accounted for, in proportion to the increase in the other country parishes, - - - - -		3,475
Total, - - -		122,391

N. B. In the former impression of this work, the population was stated merely from conjecture, to be about 130,000. It is acknowledged in the Statistical Account, that a great concealment of the number of inhabitants took place, particularly of lodgers and strangers, of which the number in Edinburgh is always very considerable. Hence it should seem that the real number of the people in all is more than above stated, probably equal to the first conjecture 130,000.

It appears from the average of several parishes in the Statistical Account of Scotland, that the proportion of males to females is about as 47 to 52; hence, in the above number, the males may be stated as 57,480, and the females as 64,910. The number of men fit to bear arms, viz. from 16 to 60, will, from averages taken in the same manner, be about 32,110.

* Of whom in the country, - - -
In the suburbs, - - -

4664
28,283
32,947

Further, it appears that there were of inhabitants,

	In towns.	In the country.	Total.
In the year 1755,	52,521	37,856	90,377
In the year 1793,	81,270	41,121	122,391
Increase in 38 years	28,749	3,265	32,014

As it may be amusing to know the rank, profession, or employment, of the principal inhabitants of Edinburgh and Leith, the following is collected from an annual list published in 1793.

<i>Rank or profession.</i>	<i>Householders.</i>
NOBILITY, including dowager ladies of quality,	20
COUNTRY GENTLEMEN, and naval and military officers,	243
CLERGYMEN, of all the different persuasions,	50
PHYSICIANS, SURGEONS, DRUGGISTS,	116
COLLEGE OF JUSTICE, including gentlemen in public offices,	648
TEACHERS of languages, MUSICIANS, and PLAYERS, &c.	119
PUBLICANS, as vintners, hotel-keepers, stabler-keepers, &c.	202
GENTLEWOMEN, ladies of fortune, mantua-makers, milliners, grocers, innkeepers, &c.	1159
ARTISTS and MECHANICKS of all kinds,	1710
MERCHANTS and traders of all kinds,	1149
No profession mentioned,	249
Total amount of the principal families,	5665

CHAPTER XVI.

OBSTACLES TO IMPROVEMENT.



THESE are not many in this county, nor (with one exception only) is their influence considerable, differing in this respect, as in many others, from the circumstances attending agriculture in South Britain. Thus,

Inclosing.—As the law stands here, the operation of that essential improvement has been greatly promoted. For, as conterminous heritors are, at the suit of any one of them, compelled to straighten marches, and to contribute equally to the erection of the intermediate fence, hence the expence is not only lessened to each, but the inclosing of the country is accelerated; as one man of enterprise among a number, has in this way the means of pushing forward the whole.

Tytbes, that bug-bear of timorous improvers, has happily no place here, nor has yet *poor rates* interposed their baneful influence to any sensible extent, between the improver of the soil and the profits. *Lands in common*, and lands in *intermixed property* are alike unknown.

Corn Laws have hitherto been very favourable to the cultivation of the soil, stimulating to improvements that otherwise could not have taken place. Therefore, if it is an object still further to promote the cultivation of our own fields, let corn laws protect the husbandman here, from the overpowerful rivalry of the foreign cultivator, who, in circumstances highly more favourable to the productions of the earth,

earth, might, and frequently would, bring his grain to our own market, at a rate greatly below what it does cost to raise it in this less genial climate. Nor should the manufacturing interest be alarmed at a measure, that has for its object the more abundant supply of our own productions, for in times of famine or of scarcity, which, in spite of every human device will occasionally happen, it will be from our own soil chiefly that our sustenance must arise. There seems to be just two grand points regarding the production of corn, to which our endeavours should be directed; the first is, to insure, if possible, an abundant home supply; the second, (on which the attainment of the first does on a good measure depend,) is, as far as human foresight can devise, to keep the price steady. The corn laws have, as yet, had very much these desired effects, and it is to be hoped, that the same principle of regulation respecting the import and export of grain, will be persevered in.

Taxes or public burdens. Very few of these affect the tenantry. *Statute labour*, now converted into a moderate composition for repairing the roads, has been such a beneficial establishment, and is still productive of such advantages, in particular to the cultivators of land, that it is more of the nature of a benefit than of a burden. The Bridewell annual assessment, although excessively disproportionate, (the tenants paying as much for a ploughgate as the proprietor, in that capacity, for his whole estate,) is a mere trifle, being only a shilling per ploughgate, and a shilling per house. Of government taxes none affect the tenant, but what are laid on during the currency of his lease, for at the commencement he can always accommodate himself to them, in his proposal of rent, giving no more than he thinks he can afford, after paying taxes and every thing else.

The *chief Obstacle to Improvement* is the WANT OF ENCOURAGEMENT TO IMPROVE, which seems to arise from the Proprietors themselves, who give too little aid towards the melioration of their own lands, leaving it, in general, to their tenants, who of necessity are limited in their exertions, from

their temporary connexion with the soil. This is the more apparent, when the improvements made by Proprietors (who have a turn for agriculture) are compared with those made by tenants, being conducted on a style of much greater enterprise, as well as finished in a more durable manner; thereby showing the more powerful stimulus arising from permanency of right in the subject. Long leases will have so far an effect to induce a tenant to lay out his money in improving the property of other people; but no leaseholder whatever can improve with the same spirit as the actual proprietor, if uncumbered with the pernicious holding of his lands in *entail*, which is, in many cases, worse with respect to improvement than even a short lease itself.

Harassing circumstances. The game is productive of much injury to the farmers, not from its quantity, which is inconsiderable, but from the frequent and violent trespasses committed on their property by sportsmen, who pay little or no regard to fences, stock, or crop. Were partridge shooting kept back to Michaelmas, (as formerly, by an act in 1555,) instead of the 1st of September, as at present, the most of the corns would be out of the way, and thus much damage prevented. *Thirlage* prevails only in few places, but ought, if possible, to be extinguished. *Vermin*: The Brown Rat is becoming more and more prevalent, while the black species seems to be on the decline. We have many *infallible powders* for their destruction, of which the most infallible circumstance is, the utter aversion which the rats have to take them. Plain arsenick is as much to their taste, and will more effectually destroy them. *Dogs*: The most harassing circumstance of all, is the almost impracticability of keeping sheep in the vicinity of Edinburgh, as they are so liable to be destroyed by the ravenous troops of dogs, which are so frequently falling out upon them from the town, often killing scores at a time. Several excellent decisions, however, on this subject, have lately been given here, by which the owners are found liable in the whole damage their dogs occasion. This evil, notwithstanding, still exists in a great degree, either from the

the culpable inattention of the owners to the maintenance of their dogs, or from the restless disposition of the creatures themselves, chiefly spaniels ; which being accustomed, in the shooting season, to tread through the corns with their masters in the fields, return of themselves when the season of hunting is over, to attack the sheep on the same grounds. The multitude of dogs of all kinds that are kept in Edinburgh, and in the vicinity, is a nuisance of great magnitude. The roads are completely infested with them, and many accidents, and much trouble, arise to travellers on that account. There are probably not less than 6000 in the county, two thirds of which could be very well spared. A small tax on each would bring about this diminution ; while the breed itself of the remainder would be improved *.

* Suppose only 500,000 dogs in Great Britain, a tax of only 1s. for each would raise L. 25,000 per annum, which if laid out on national improvements under the direction of the Board of Agriculture, would do more good to the country, than all the foreign wars, foreign subsidies, or even the national debt to boot, has ever yet done harm.

CHAPTER XVII.

MISCELLANEOUS OBSERVATIONS.

SECT. I.—*Agricultural Societies.*

A VERY respectable farmer society, that of Dalkeith, was instituted in this county about 35 years ago, for the prosecution of thieves, &c. In addition to this, it has become a society in which the various circumstances connected with agriculture are the subjects of discussion. The expence attending this association is very small; being sixpence on the ploughgate yearly, collected by one farmer in each parish, who takes that trouble in rotation, as also that of representing the parish at the general meeting held on the first Thursday of each month at Dalkeith. Twenty parishes have now joined in this society. The annual contributions amount to about 30 l. and the stock at present is about 120 l. which is found fully adequate to the purposes of the institution, for whether it be owing to the ideas entertained of the power of the society, as fully able to prosecute, or whether it be conceived that a society is more unrelenting and inexorable, (which in fact it always is,) than an individual, it has come to pass, that robberies and petty thefts are much less frequent than formerly, so that but few demands are now made on the funds for the prosecuting of offenders. The society keeps a clerk to make a regular register of the transactions, whose salary arises from fines imposed on absent members*.

As

* In extraordinary cases the annual contribution has been doubled, in order that the funds might be equal to the demand upon them, as it lately happened

As at this club farmers from every part of the county attend; the influence which it must have, in extending the knowledge of improvements in husbandry, cannot but be great. In fact, many farmers go thither on the days of public meeting, with the express view of getting intelligence upon the subject of agriculture at large. It was also through the medium of the Dalkeith farmer society, that the united voice of the farmers in this county was publicly announced, declaring their respect and veneration for the constitution of the British government, as now established, and their marked abhorrence of those principles of anarchy and licentiousness, which were very lately attempted to be imposed upon this country *.

In the statistical account of the parish of Cranston, the following circumstances respecting an agricultural society, which formerly existed in that neighbourhood, are thus related :

“ It was in this parish that the first example of drill husbandry was given. Sir John Dalrymple of Coussland, grandfather to the present Baronet, was the first person who introduced into Scotland the sowing of turnip, and the planting of cabbages in the open field. He also greatly improved the breed of horses and black cattle, and was among the first who sowed clover and rye-grass. Mr Cockburn of Ormiston, and he, both of them distinguished by zeal
“ for

pened when a horse-stealer in this county was pursued into Yorkshire, where he was capitally convicted, and the horse recovered by the owner, who was sent after him along with other witnesses, at the expence of this society.

* The farmers in this county have long had in contemplation, to get instituted by legal authority, a society for the creation and management of a provisionary fund for the widows and orphans of farmers, on principles similar to those which govern the widow's fund of the ministers of the church of Scotland. That however has not been brought to maturity, although an ingenious scheme for the purpose, published by the present Sir James Foulis of Collington, met with great approbation. It is still to be hoped, that this object will be obtained, as well as that some proper bond of union may be cemented among husbandmen in general, to enable them to withstand the illegal extension of borough privileges, or corporation claims, which individuals, single and unsupported, cannot resist.

“ for their country, and a passion for agriculture, established
 “ at Ormiston a society which had for its object the im-
 “ provement of husbandry. Besides actual farmers, persons
 “ of the first rank in the country were proud of being in-
 “ rolled as members of that club; the Duke of Perth, and
 “ John Earl of Stair, regularly attended its monthly meet-
 “ ings.”

A society of the same nature was, (perhaps about the same time, and under similar circumstances,) established at Ratho, in an opposite side of the county, but both have long since been dissolved, none remaining at present in this county but that of Dalkeith, and which seems to have been partly indebted for its permanency to the original cause of its institution.

SECT. 2.—*Weights and Measures.*

Flour, pot-barley, groceries, iron and ropes, are bought and sold here, by what is termed *English* weight, being 16 oz. to the pound, and 16 lbs. to the stone.

Butchers meat, oat-meal, and flax, are bought and sold by what is called *Dutch* weight, of which the proportion to the English is as $17\frac{1}{2}$ to 16.

Wool, hay, and butter, are bought and sold by *Trone* weight, of which the proportion is to the English, as 22 to 16.

Other articles are bought and sold by either of these weights, according as people make bargain.

In *long* measure the *inch* is the root, of which 12 go to the foot, and 37 to the Scotch yard.

Land is measured by a chain 24 yards in length, or 74 feet, divided into 100 links, of 8.888 inches each in length; 10 square chains make an acre, or 5760 square yards Scotch, equal to 6084.444 English; and as the English acre consists of 4840 square yards, hence the proportion that the Scotch acre bears to the English is, (with a small fraction more) as 5 to 4.

In liquid measure the *pint* is the root, containing 103.404 cubic inches; the half and quarter in proportion.

The

The Linlithgow wheat firloot, (the only standard measure for that grain in Scotland,) contains $21\frac{1}{4}$ pints; hence in cubic inches 2197.34. The Winchester bushel, (in like manner the English standard,) contains 2150.42 cubic inches; hence the Scotch wheat firloot is about $2\frac{1}{7}$ per cent. greater than the English bushel.

The Linlithgow barley measure, (likewise the standard,) contains 31 pints, or 3205.54 cubic inches, hence $5\frac{3}{4}$ bushels, are very nearly equal to the Scotch boll of 4 firloots.

The measure for potatoes is altogether arbitrary, differing in one part of the county from another, and in none does it seem to be steady.

At the first introduction of that excellent root into cultivation, the measure used for selling it was the barley firloot, containing 31 Scotch pints, and the boll thence weighing about 18 stone English, or averdupois weight. In process as the culture of potatoes extended, it became more difficult to dispose of them, as they then became more plenteous; this induced the growers of them to augment the measure a little, by giving a small heap above the level of the wood of the vessel they were measured in: this increased the weight to about 21 stones, at which it in general remains to this day in the remote parts of the county. The quantity grown, increasing still farther, *the heap above the wood* was still more augmented, so as to make 24 stone the boll, at which it remained for many years, as it was not easy, in measuring, to pack a greater quantity above the wood of the firloot. About 12 or 15 years ago, however, in consequence of an increase in the crop, some dealers in that article, wishing to attract more of the public sale to themselves, contrived, by projecting the potatoes in measuring beyond the limits of the firloot, to augment the quantity, so as to make the boll weigh 28 stone, or 4 Cwt. Much confusion arising from the difference in the measure, that now took place among the different dealers, the Magistrates of Edinburgh, with the best intention, now interfered, and in the view of making the measure of potatoes to be uniform, caused a standard, in the form of a barrel, to be made by the city cooper, and stamped with the town marks. This,

to

to serve in time coming; and as no heap is allowed to be given above the wood, it would have the effect to put all the dealers on an equal footing.

It would be a desirable circumstance that this self-assumed standard by the Magistrates should have the sanction of the legislature, to make it binding upon the lieges, which would prevent the differences which still frequently happen on that subject, and save, to many well-meaning people, those fines which the Magistrates, in a fit of popularity, are apt to impose.

Straw is sold by *tale*, 40 *windlens* to a *kemple*, generally from 14 to 16 stone trone weight.

It were much to be desired, that the weights and measures all over Great Britain were at least more uniform, if not so altogether. The English *weight* and English *busbel*, which at present are both well understood in practice, however difficult it may be to define them in theory, would perhaps be the fittest capacities to be made legal in both ends of the kingdom, as they are already more generally known than any others. Respecting the English *acre*, it will probably, in a short time, be generally used in Scotland, as well as in England, without compulsion, as it is already introduced into several of the counties. Nothing seems hitherto to have retarded so much a more general uniformity in weights and measures, than that absolute perfection, (inconsistent with human attainment,) that has been aimed at by all projectors on this subject. What hinders any new standard that may be fixed on, from being preserved unaltered, as well as the present Scotch legal corn measure, which consists still of the same capacity that was originally determined 209 years ago?

SECT. 3.—*Land-rent of the County.*

This, formerly referred to page 56, will best appear from the following Table, taken from the Statistical Account of the Parishes.

STATISTICAL TABLE, N^o. V.PART I. *where the present Rent is ascertained.*

Parishes.	Scots. Valued Rent.			Sterling. Real Rent.
	£.	s.	d.	£.
Cockpen,	3,068	15	8	1,450
Corstorphin,	5,200	2	4 $\frac{1}{2}$	5,000
Cramond,	9,591	12	2 $\frac{1}{2}$	7,500 *
Cranston,	6,207	8	0	2,800
Currie,	5,363	2	8	5,000
Inveresk,	15,373	2	5	6,500 †
Lafswade,	7,436	6	8	5,500
Libberton,	13,685	6	8	13,685 ‡
Mid-Calder,	5,250	16	8	2,519
Ratho,	6,252	13	8	5,000
West Kirk,	29,536	13	4	30,000 §
	106,966	0	6	84,954

* Consistent with my own knowledge.

† Besides L. 5000 as rent of houses.

‡ The rent several years ago was stated, from good authority, to have been L. 10,000 then; from the recent remarkable rise, it cannot now be less in pounds Sterling than its valuation in pounds Scots.

§ There is stated to be 9000 acres in this parish, hence the above estimate is only at the rate of 3l. 6s. 8d. per acre; a moderate rent, compared to what lands are now letting for there.

PART II. *Where the present rental is not ascertained.*

Parishes.	Valued Rent.		
	£.	s.	d.
Borthwick,	5483	18	0
Canongate,	4365	0	0
Carrinton,	2830	0	0
Colinton,	4514	11	0
Crichton,	4123	17	8
Dalkeith,	7548	2	4
Duddingston,	3687	11	8
Fala*,	674	0	0
Glencrofs,	1579	8	0
Herriot,	2803	10	0
Kirkliston*,	3578	0	0
Kirknewton,	3760	3	4
Leith, South,	6413	2	11
Leith, North,	1220	17	0
Newton,	4887	15	2
Newbattle,	7138	16	0
Pennycuick,	3780	3	4
Stow*,	8239	13	4
Temple,	4399	10	0
West-Calder,	3060	3	8

Total old valuation, L. 191,054 3 11 Scots money.

As from the example in the first Table it appears that L. 10 Scots of valuation gives 7l. 18s. 10d. Sterling of real rent, therefore the whole rent of the county should be L. 151,737. In the former impression, this was stated from mere conjecture to have been L. 145,750. It may indeed be remarked, that the rent of lands has risen considerably since that period, although only about $2\frac{1}{2}$ years ago, but it must also be observed, that the calculation of the above ascertained rents was made 3 years ago likewise.

* Only part of these parishes in this county according to the valued rent here inserted.

SECT. 4.—*Produce of Land.*

The following calculation, with regard to the proportion of the different crops, &c. with the value of the produce respectively, was published in the ABRIDGED REPORT about a year ago, and has since been in circulation; yet although no objections have been communicated respecting it, nevertheless it is not stated here as being completely correct, but is offered merely as probable conjecture. No alterations have been made upon it since it was first published, excepting merely as far as regards the rent of land, and capital employed in husbandry, which are corrected from the preceding pages of this work.

I.

In the low Country there may be:

	Acres Englsh.	Gross produce per Acre.	Gross amount.
In wheat, - - -	10,000	£. 7 10	£. 75000
Barley, - - -	7,500	5 0	37,500
Oats, - - -	10,000	6 0	60,000
Beans and pease, -	6,500	5 0	32,500
Rye and tares, - -	500	5 0	2,500
Potatoes and yams, -	1,250	8 0	10,000
Turnip and other greens,	1,750	5 0	8,750
Hay from sown grasses, -	15,000	5 0	75,000
Ditto natural, - -	4,000	3 10	14,000
Pasture, - - -	10,000	2 0	20,000
Sale gardens and nursery,	1,125	15 0	16,875
Private gardens, - -	625	10 0	6,250
Woodlands, - - -	3,000	1 0	3,000
Fallow, - - -	3,750	0 0	0,000
	75,000		£. 361,375

Annual rent of this division, L. 123,750. = 33s. per acre.

II.

In the moorland districts there may be :

	Acres.	Gross produce per Acre.	Gross amount.
In Oats - - - - -	15,000	£. 4 0 0	£. 60,000
Bear - - - - -	3,750	3 10 0	13,125
Pease - - - - -	2,250	3 0 0	6,750
Hay from sown grasses	6,000	3 10 0	21,000
Ditto natural - - -	4,500	2 0 0	9,000
Turnip and other greens	1,200	3 0 0	3,600
Potatoes - - - - -	300	7 0 0	2,100
Private gardens - -	150	8 0 0	1,200
Woodlands - - - - -	2,000	0 15 0	1,500
Pasture, heath, &c. -	39,400	0 7 6	14,775
Fallow, - - - - -	450	0 0 0	0,000
	75,000		£. 133,050

Annual rent of these lands, 22,750 l. = 6 s. per acre.

III.

In the hills, 75,000 acres in pasture.

Produce per acre 6 s.

Gross amount L. 22,500.

Annual rent of this division, 5000 l. = 1 s. 4 d.

RECAPITULATION.

	Acres.	Average rent.	Gross Rent.	Aver. prod. per acre.	Amount of produce
		£. s. d.	£.	£. s. d.	£.
In the low country	75,000	1 13 0	123,750	4 16 4 $\frac{1}{4}$	361,375
Moorlands, -	75,000	0 6 0	22,750	1 15 5 $\frac{3}{4}$	133,050
Hills - - - - -	75,000	0 1 4	5,000	0 6 0	22,500
Roads, &c. -	5,400				
Totals - -	230,400	0 13 5 $\frac{1}{4}$	151,500	2 5 11 $\frac{1}{4}$	516,925

Subtracting

Subtracting the lands employed in woods, gardens, and nursery, there remains of productive lands in husbandry proper, 218,100 acres, of which the rent may be about L. 140,000, and the produce L. 488,100. The rent thus being at an average per acre, 12 s. 10 d. and the produce, 2 l. 4 s. 9 d.

Capital employed on land, in the whole county, (<i>See page 69.</i>)	-	£.	543,750
Ditto on the lands in agriculture proper,	-		508,750
Total annual produce of the crop on ditto,	-		488,100
Disposed of as under :			
For rent,	-	£. 140,000	
Seed, including grass seeds,	-	65,000	
Tillage, ploughing, harrowing, rolling, &c.	-	65,000	
Carriage of crop, manure, fuel, &c.	-	65,000	
<i>Note.</i> —Tear and wear, and renewal of draught horses, &c. amounting to L. 25,000 annually, are included in the above.			
Reaping and inning,	-	16,650	
Threshing and cleaning, &c.	-	16,650	
Weeding of the corns, planting, hoeing, and taking up of the potatoes, turnip and other green crops,	-	11,000	
Hay-making, stacking, &c.	-	8,000	
Expences attending pasture on 125,000 acres, at 1 s. per acre annually,	-	6,250	
Loss on ditto, by cattle dying, stolen or strayed,	-	6,250	
Prime cost of manure bought,	-	12,500	
Meliorations performed by tenants in draining, inclosing, road-making, &c. at the rate of 5 l. each annually, including what is done by proprietors in the capacity of farmers	-	3,930	
Reparation of buildings, ditto,	-	3,930	
Turnpikes, market charges, ale-money to servants, and such casualties, at 13 l. 2 s. 3 d. each, hence,	-	10,253	
Bad debts, and law expences, at 5 l. each, hence,	-	3,930	
Taxes, road-money and assurance, 5 l. 14 s. 1 d.	-	4,460	
Carry over,	-		438,803

	Brought over,	£. 438,803
Profit on the farming capital, being about 9l. 13s. 9½d. per L. 100 <i>per annum</i> , in- cluding the expence of family living*,		49,297
		£. 488,100

The operations in agriculture are supposed to be conducted by 675 families of farmers, under whom are 2,346 families of hinds constantly employed; 1,014 families of mechanics dependent on husbandry, and occasionally employed in it, and 2,700 domestic servants: also 460 families of hinds and mechanics employed by proprietors in the above capacity, besides extra labourers in hay-time, harvest, &c.

MISCELLANEOUS PARTICULARS,
which either could not be included in any [of the foregoing chapters or sections, or were omitted from inadvertency, or want of information at the time :

Starch manufactured in 1788,	- - -	lbs. 474,426
Ditto, in 1795,	- - -	73,825

Riding and carriage horses in 1794.

In Edinburgh,	- - -	Horses. 343
In the county,	- - -	910

Duties paid for ditto in all,	- - -	£. s. d. 890 14 0
-------------------------------	-------	----------------------

Neither post-horses nor hackney-horses included in the above.

Houses

* From page 67 it may be seen that the profit on a farming capital in the vicinity of Edinburgh is only about 7 per cent. *per annum*; it however may be remarked, that in the more remote parts of the county, as there is less competition there for land, it will be considerably more; yet although the husbandmen in these situations may have a better interest for their capital, (which in fact commands a greater portion of ground,) yet it is probable that they have a still lesser recompence for their labour in proportion, besides living under more ungenial circumstances.

OF MID-LOTHIAN.

219

Houses paying Window Tax in 1794.

	Houses.
In the country, - - - - -	2154
In the town, - - - - -	1851
	£.
Old duties for ditto, - - - - -	3980
Commutation ditto, - - - - -	5170
Total window-light duties, - - - - -	L. 9150

Number of Houses paying duty 1794.

	Houses.
In the country, - - - - -	3198
In the town, - - - - -	3278
	£.
Amount of duties, - - - - -	3607
	Licences.
Hair-Powder licences, 1795, about - - -	5000

Printing-Houses in Edinburgh.

	Printing-Houses.
In 1763, - - - - -	6
In 1790, - - - - -	16
In 1796, - - - - -	25
Number of Presses in 1796, - - - - -	80
Four men and boys to one press, hence, - - -	320
	£.
Capital required to one press, - - - - -	200
Total capital in this business, about - - -	16,000
Wages paid weekly, - - - - -	200
Yearly, - - - - -	10,400

The following particulars connected with government duties, may give an idea of the increafing affluence of Scotland in general. Thus,

	Yards.
In 1763, Printed cottons manufactured, - - -	150,000
In 1794, Ditto, - - - - -	4,927,000
	1763,

216 AGRICULTURAL SURVEY

	lbs.
1763, Soap manufactured, - - -	500,000
1794, Ditto, - - -	5,000,000
1763, Candles, - - -	1,400,000
1794, Ditto - - -	2,760,000
	Reams.
1763, Paper manufactured, - - -	6,400
1791, Ditto, - - -	100,000
	lbs.
1763, Starch manufactured, - - -	37,000
1783, Ditto, - - -	614,539
1794, Ditto, - - -	735,000 *
	£. s. d.
Duties for ditto at $3\frac{1}{4}$ d. per lib, 9,953	2 6
	lbs.
1795, Ditto, it has fallen to, - - -	324,661
1763, Glass manufactured, - - -	1,769,712
1794, Ditto, - - -	8,960,000
	£.
1763, Post-Office revenue, - - -	11,942
1783, ————— upwards of, -	40,000
1763, Revenue of the Excise, - - -	130,000
1791, Ditto, - - -	499,960
1794, Ditto of the Stamps, about - -	75,000
	Carriages.
1763, Number of 4 wheel carriages, - -	396
1790, Ditto, - - -	1427
	Bushels.
1791, Bushels of malt charged with duty, -	2,068,000
	Barrels.
Barrels of beer and ale, ditto, - - -	305,000
	Number

* This, at 80lb. of Starch the boll, which is said to be the average produce, would require above 9000 bolls of wheat; an article in this manufacture that may now well be dispensed with, since it is found that red yams, (which are no part of the food of the people) can be applied much more profitably to the same purpose.

Bricks and Tyle.

1794, Number of Bricks and Tyle charged with	
duty, - - - - -	18,000,000
	lbs.
Pounds weight of Leather, ditto, - -	3,000,000

N. B Much of the above information is taken from the Statistical Account of Edinburgh.

CONCLUSION,

Means of Improvement, and the Measures calculated for that Purpose.

BESIDES the suggestions already offered in the foregoing paper, it may be observed, that one great improvement to be made in this county, would be to compleat the inclosing of lands. At present, not one half of the grounds are in that state, and of those that are, not one half of the closes are fencible; many of the quick fences indeed have yet hardly had time to come to maturity, so recent has been the practice of inclosing. This most effective scheme of melioration should be wholly executed by the proprietors, whose capital can never be better employed than in increasing the value of the lands of which they are possessed. The capital of the farmers ought never to be diverted from its natural destination, nor their attention distracted from the proper objects of their profession, namely, the cultivation of the soil, and the improvement of the stock in their possession. Were the landlords themselves to undertake the whole business of inclosing, they might securely trust to their being amply recompensed by the rise in their rents that would naturally follow. That would clearly point out the value of the improvement, and, without causing the least murmur, would, in all probability repay their expences sooner, than any rate of interest they can with moderation propose. Were the whole of this county completely inclosed, and subdivided into closes of a moderate dimension, the produce could not fail to be greatly augmented, both in the low country, where corn is the principal

cipal object, and in the upland districts, where the rearing of cattle, and the feeding of flocks are more attended to. The advantages of inclosing are great, both because distinct divisions of land afford an opportunity of arranging particular soils according to their peculiar qualities, and because the fertility of the whole is increased; by the warmth and shelter arising from the hedges and fences themselves. From inclosing alone, I am convinced, that the produce of the county would be augmented one third, and the rent increased in a still greater proportion*.

Another great improvement may be made by completely draining the soil; not only by laying dry the several bogs or swamps which still remain, but also by thoroughly leading off the numerous veins of underwater that are to be met with in many districts, in every farm, and almost in every field. In this important branch of husbandry, the landlords have hitherto done nothing; leaving to their tenants the whole care and expence of the operation, and who very naturally proportion their exertions to the less permanent interest they have in the subject†. Allow the tenants the expence of the drains at the end of their leases, and the landlords will find, for very little cost, their grounds, in this respect, highly improved.

Farther, although we have already many plants, well adapted to the soil and the climate, (though some of them are but little attended to,) yet some *new species* might be introduced, which would have a very beneficial effect. The great want we labour under at present, is a scarcity of green food for

E e 2

cattle

* I know an instance where land inclosed lets at 50s. the acre, while the adjoining ground, equally good in quality, will not give more than 15s.; but it may be observed, that it is in the remote parts of the county that inclosing becomes so highly beneficial, from its scarcity.

† I lately saw a drain filled up with loose thorns, laid carelessly in, and the mould hurdled upon them, without any intervening covering, to prevent a mixture. The tenant had only one crop to take, and it was of little importance to him, that this drain should become useless in a month after he left the grounds.

cattle in the end of the spring. Turnips have prolonged the use of succulent food for four or five months, giving a greater supply in March and April than was formerly to be had in October and November. Clover, besides being more juicy, has come in a full month sooner than the cut-grass formerly, but still a proportion of the year is left deficient in green crop. Turnip fails in April, and clover gives but little aid (even in pasture) before June. It would be of vast importance to fill up this blank. For the feeding of sheep, and even horned cattle, a considerable supply can be had. Rape is known to grow here luxuriantly; stands the severest winters, even when the common colewort, the hardiest of our culinary plants, has failed. It comes in as a green food, precisely where the turnip ends. Why may it not be sown in autumn after an early stubble? The expence of seed does not exceed 3s. the acre, and it can be disposed of by feeding, in time enough to let barley be sown in succession; even were it to remain on the ground till June, turnip might succeed, so that no crop would be lost. Winter tares may afford a similar relief to horses: if they could be cut even a fortnight only before clover, they would be a great acquisition; and as they can be succeeded by turnip, neither would a crop be thereby lost. Other plants may be still brought in aid to accomplish this great object: 60 years ago, the cultivation of clover, potatoes, and turnip, which now make a distinguished appearance in our husbandry, were as little thought about, and still less known.

Lastly, the *breed of animals* has by no means been studied in this county, nor, it should seem, in Scotland at large, with that zeal and discriminating accuracy by which the sister kingdom to the south has been distinguished. Yet, although that enthusiasm which animates the English husbandman in this branch of his profession, may not be looked for among the farmers here, a greater application to the rearing of cattle, particularly draught horses and milch-cows, would not be incompatible with their other interests. They might at least, in breeding, select the best of each species they are already possessed of, and from them raise a stock within the bounds
of

of the county, sufficient to supply themselves, in place of sending for cattle to a distance, or obtaining them, as at present, by an undistinguished propagation from the few they rear at home. The cheviot sheep, in point of hardiness, size, and wool, should be cultivated in most, if not, in all the hilly parts of Scotland. Yet these, there is reason to believe, have been brought to the present pitch of excellence, not so much from any peculiar quality in the kind itself, or in the walks on which they range, as from the continued attention of the farmers, to rear only from the best of their flocks, and to preserve these from being contaminated by others of a lesser degree of perfection. A judicious crossing may accelerate any desired quality in a breed: The climate or the soil may retard or promote improvement; but in the breeding of animals, as in the production of plants, much depends on the assiduity, the judgment, and the genius of the husbandman himself.

EXPLANATIONS.

The estimate of the wages of a ploughman, (page 169,) was copied verbatim from the former impression of this work published in 1793. Wages, however, have since continued to advance, and must now be reckoned at from 8 to 10 per cent. more. Likewise, where it is stated, (page 85,) that 2 horses in a plough can till 1 English acre in a day, it must be understood to be at a time, when 2 yokings, of 4 hours each, can be made, and that the work meets with no interruption; but, taking one part of the year with another, and making allowance for the time lost by bad weather, accidents, and sickness, not above 3-4ths of an acre is ploughed daily on an average of years.

OMISSIONS.

[*The following Observations by JOHN NEWTON, Esq. of Currie-Hill, came too late to be inserted in their proper place.*]

Covenants in Leases. On entailed estates, the tenant by agreement

agreement is sometimes bound to inclose the land at his own expence; but to remedy the evil that arises from neglect of the fences, the tenant should be paid a price previously agreed on, by the road, for all that is fencible at the end of the lease. The more that the Proprietor has to pay in this way, the more will the land be meliorated, and a rise in the rent will in proportion ensue.

Respecting the state in which the lands ought to be left at the expiration of the lease, there ought to be a given rotation for the last 3 years strictly attended to; for, in many cases that happen, by injudiciously *scourging* the land, as it is termed, the tenant hurts both himself and his successor.

Inclosing. A ditch 3 feet wide at top is in many cases too little; if judiciously done, it ought always to be according to the soil; for where that is thin, and of a *till* bottom, the ditch ought to be at least five feet wide at the top, three feet deep, and one foot wide at the bottom, the surface soil properly arranged for laying the bed for the thorns, and those laid as high as possible. They will indeed, from being laid high, make less progress for the first two or three years, but as the roots have thus more earth between them and the till, they will thrive much better than a lower planted hedge on a damp soil.

Where lands are more adapted to pasture than tillage, opposite soils are an advantage to an inclosure, as there is afforded thereby a variety of pasture, besides being more suitable to a change in the seasons.

J. N.

In the enumeration of *crops not commonly cultivated*, RAPE might have been mentioned, as it has been grown, in several instances, in this county; so also has MUSTARD: both these plants may be cultivated to greater extent in our fields, as they are found to agree with the climate. Hitherto, however, the quantity sown of either has been too limited to admit of more being stated on the subject.

In the roll of ancient families of distinction in this county, it was omitted to state RAMSAY of *Whitehill* one of the oldest in Mid-Lothian. And instead of 104 freehold estates, as stated in page 38, there are only 94 to the extent there mentioned.



N. B. *All notes signed G. R. as well as those without any signature, are by the Author of the Survey.*

THE END.

APPENDIX.—No. I.

*Observations by Mr THOMAS SCOTT farmer at
Craig-Lockhart, on the Husbandry of MID-
LOTHIAN.*



THE various and particular situations of the different lands in this county make them applicable to different purposes. The value of ground within half a mile of the suburbs of Edinburgh; for raising nursery and garden stuffs, for butchers to rest their cattle on, for pasturing at hand horses by the night, and cows that are milk'd twice a-day, is far beyond any thing that could be made by tillage. Pasture grounds in the neighbourhood of Edinburgh have peculiar advantages. They are made uncommonly rich by numerous herds of cattle, being often more like a fold than a grazing field; and from the great quantity of smoke constantly hanging over them, the grass is not only more plentiful, but comes earlier, and continues longer, than where ground of a better quality is in a different situation.

The value of the fields from the immediate vicinity, till three-fourths of a mile farther from Edinburgh, decreases greatly, and they are but in part occupied in the same way as the former. The demand, as yet, for grazing purposes, not having extended so far, a great part is kept in tillage; and though far from being well farmed, let 15s. or 20s. higher than can be afforded for land less than a mile further distant; such a difference does the command of dung and ex-

(A)

pence

pence of carriage make. The crops in general are potatoes, wheat, sown grafs for cutting, and oats. When a field is broken up that has been long in pasture, potatoes and wheat alternately for years are not uncommon. The occupations are small: few exceeding 20 acres.

From a mile, or a mile and a quarter beyond the suburbs, to the distance at which they can be kept in good heart with Edinburgh dung, or otherwise, excepting a mere trifle, is, and has been, kept constantly under tillage. Notwithstanding that a great part of the ground has been inclosed for many years past, some of it in a most substantial manner, without any other advantage being derived hitherto from those costly fences than what has been gained by pasturing, the foggage, and protecting winter crops from the depredations of the farm cattle, and on the road sides from that of travellers; such a value does the farmer in this part of the country put upon raising grain, hay, and cut grafs, that few of them reserve so much in pasture as is sufficient for grazing the young stock they rear; which tends not a little, at times, to rise the rents of grafs parks let for the season.— These grounds, notwithstanding the show of yellow weeds that attract the attention of strangers, are, in general, in a high state of cultivation, and have as much made of them as can be done any where. That part of them lying within three miles of the town, and even some farther distant, excepting a few swampy spots, and small fields of inferior soil, have been in tillage from time immemorial, and the greatest part of them was in wheat every fourth year, until sown grafs was introduced, which, for thirty years past, has occupied fully a fifth of the whole. Potatoes, wheat, and cut grafs, are the crops of greatest value, and the nearer to Edinburgh, can be raised more frequently, and to greater advantage, than where removed to a greater distance; not only from having a greater command of manure, but the carriage of some of these articles is such an object, that, excepting in times of scarcity, there is little cut grafs brought above three miles. The cultivation of the lower part of this country has been progressively improving for more than half a century;

tenants

B 3 L

tenants were then beginning to inclose their farms upon long-leaves, rye grass and clover in small quantities were sown, and potatoes planted in the fields. One (named) Prentice, a strolling gardener, who had resided a few years in England, was the first who did so, and being found a profitable crop, where the ground was light and dry, and a good preparation for wheat, they were in a few years raised in such quantities by the farmers near the town, that they became a drug; and being an article that would not keep beyond the season, discouraged raising of them to such extent for some time, till the price getting up for a year or two, afterwards led many again to plant more than the market called for, which, of course, brought on the same consequences, and in this periodical manner hitherto, have they, every four or five years, been a crop difficult to dispose of, and little to be got by them. This limited consumpt precludes the planting of potatoes universally in large quantities, from being a general article in the system of farming. The consumption of hay being then but small, the sowing of rye grass and clover was little attended to for ten or twelve years; when the demand for hay increasing, the sowing of grass seeds soon became general, and great crops were produced. Levelling the fields, and straightening the ridges, became very common. This, with stoning and preparing the ground for sowing grass seeds, introduced a better cultivation, and the finishing of the fields in a neater manner. A spirit for improvement was conspicuously diffused, through the laudable exertions of the Edinburgh Society, who gave premiums, and published works, that roused the attention, and excited emulation among all classes. The old practice of sowing wheat after oats was in a great measure given up; and summer-fallow potatoes, (where the ground was free and dry), *rag-faugh* †, and drilled beans, became in general the preparation for a wheat crop. This last preparation being found to answer where the soil is too heavy for raising crops of potatoes, was, and is still frequently put upon such parts of a potatoe field as are of that quality.

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But

† Rag-faugh is ground ploughed up, and prepared for wheat, that has been two years in grass, and generally gets three furrows, but sometimes requires a fourth.

APPENDIX

But as they did not thrive on a soil soon affected by drought, peas were tried in drills; but they, from falling over the interstices, and preventing the ground being wrought with the plough, were given up also, as was the white Charlton pea, after being raised in the fields by several for selling green in the Edinburgh market, who found the return no object, after the expence was deducted.

Crops of turnip were raised, but the consumption depending then upon buying in cattle, and the price on selling frequently not answering expectation, the cultivation of them for long was little attended to.

About the year 1760, the face of the country was greatly altered, much ground was inclosed, drained, and laid down with grass seeds that never had been cultivated before. The beneficial effects of sown grass was conspicuously obvious; the farm horses were enabled to do more work, cows gave more milk, the cattle reared were increased in size, land laid down for pasture produced more the first year, than when left out or ley, according to the old practice, it did in four or five, and when sown for hay after being two years cut, produced crops of corn superior to what it would have done when laid down. St Foin and Lucern were sown by several. The first was soon given up, the other was long persevered in by Lord Napier at Merchiston, as it had been some years before by Lord Drumore at Drumorepark; but not turning to great account with either, the culture of that grass hitherto has been little attended to. Several tried the drilling of wheat and barley, and after persevering for some time, and put to considerable expence for drilling apparatus, gave it entirely up; to such length was it carried, that I have seen in one farm from 70 to 80 acres at a time: the objections against it were, the stems more broke down by wind and rain, than when sown broadcast, thereby an easier prey to crows and pigeons; and from the crop not occupying the ground so equally during the long interval betwixt hoeing and reaping, any root weeds left, throve in an uncommon degree, in the interstices, where the ground had been so much pulverised. Besides, the returns in general fell short of expectation. To such a pitch did a spirit of improvement and speculation arrive about thir-

APPENDIX.

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ty years ago, that we became dupes to quacks. Burnet and Timothy grass seeds were bought and sown to pretty good amount, as was Baron Van-Hawke's manure. A stallion of Bakewell's breed, an unweildy and inactive animal, and one or two of his bulls, were brought into this county; likewise the Lancashire breed of cattle; none of them, however, were much propagated. Several crosses were tried for procuring a more active kind of horses, and, after many experiments, the plain west country, or Clydesdale breed, are esteemed the most tractable, and the best for slow heavy work: and for milch-cows, crosses with the Alderney and Guernsey, seem to prevail more than any other, and to succeed better. They have, in general, two great qualities, 1st, That of not going soon yeld; and, 2^{dly}, Giving richer milk and butter. The breed, when first imported, had a delicate, and rather diminutive appearance. But by the second or third generation, they became as hardy and plump in the figure, as any kind whatever. I have had of them, by crossing, that for eight or nine years were never yeld, and always slaughter fat; when other kinds, in the same stall, were but very indifferent*.

About twelve or fourteen years ago, two horse ploughs became very common. They had frequently, for six or seven years before that, been used for ploughing light land, seed-furrowing, summer fallow, barley land, and potatoes; but being then only, in most instances, a reduction of the old Scottish plough, with a long sock and coulter, and not executing the work in stiff, or very firm land, so effectually as it ought, made two horses be considered inadequate to the ploughing of land properly, until the principles upon which the Rotheram plough was constructed, (which had been introduced into this county thirty years before, for the purpose of ploughing up sprooty meadow grounds) came to be better known; and from practice, the power of two horses is so much better understood, that now a greater number are never to be seen in a plough, but in extraordinary cases.

Green

* A cross between the Galloway and Alderney would probably make a good breed. The cross that turned out so well with me, was with a good kind of cows procured from a cross with the cows of this county, and the short horned kind.

Green kail and cabbages were planted in the fields about ten years ago, near the town, to the extent of an acre or two on a farm, and sold well at the time distillation was stopt and fodder high; but as soon as distilleries were then again set a going, the demand fail'd, and such crops were a good deal given up, so that for some time, few have been planted but for the farm cows, and for that purpose, cabbage, yams, and red curl'd kail, are found of the utmost advantage for winter and spring food. No green crop whatever, affords more sustenance, than a crop of green kail, on rich ground, in the end of April and beginning of May.

The raising of turnips has been a good deal revived of late years, but is no great object to the farmers in general, where the ground can be kept rich with Edinburgh dung, and where wheat crops thrive. About five years ago, several of the farmers near the town had pretty large fields of them, and a good many was sold as high as seven pounds *per* acre; but finding the sale limited, and some left on hand, discouraged raising them to so great extent till last winter, that the high price of fodder, and distillation going on slowly, brought a great demand, and led to the sowing greater quantities last summer than ever, and the causes for increasing the demand continuing, they sell 20s. *per* acre higher than last year, the demand in this way is however very limited. The cow-keepers, and butchers of Edinburgh, never have, in one year, consumed a hundred acres; and it cannot be counted upon as a staple article to the farmers in general, in this part of the county, though on deaf dry land, the sowing turnip and a crop of barley after, is found to be more profitable, than sowing wheat.

Barley is now frequently sown in this part of the county at the same time as oats, and where the ground has been well prepared, turns out fully better than that which is sown later. The grain never fails to be of a better quality.

The errors that seem to prevail most among the farmers in this district, is an over propensity for crops of wheat, and a great reluctance to lose a crop, when the land requires more work than can be given to a drilled one; which causes
wheat

wheat often to be sown, where either oats or barley would have been more profitable, and beans drilled, where, had the ground been summer fallowed, the crop of wheat after, would have been worth a great deal more than both the beans and wheat, and the land left in a high state of cultivation.

The other arable lands in this county, where manure cannot be procured for keeping them all under tillage, recourse is had to pasturing apart, and winter feeding cattle, or sheep, and, in this situation, inclosing is of the utmost consequence, not only by affording shelter, but as it gives cattle feeding at their ease, greatly the advantage over those driven about by a herd. The old practice, of leaving out the land that was intended to rest, without sowing grass seeds, is almost given up. Some lay down what is intended to be pastured very properly, before it is too much exhausted, and sow such grass seeds as is calculated for procuring a close sward; but for the greatest part, they are reluctant to lay land down for pasture to rest, until it has been rather severely cropped, and, in the western part of this county, little else is sown but rye grass with a view to thrash for feed. A severe mode of cropping, as all is carried off the ground in the end. Pasture ground, left in this state, must continue long to be much the better of lying ley. How slowly is it enriched by all the cattle it feeds, and if it be a heavy thin soil, it derives as little benefit from the atmosphere. With a close sward of grass, the ground not only grows faster rich, from the greater quantity of pasture it yields, and the manure it consequently receives, but by being rich, and close in the sward, the soil is prepared to receive, and absorb a great part of those rains that otherwise would run off, and carry away useful substances more than they bring.

A great many turnips are now raised, and good crops to be seen, fed off in various ways; sometimes with sheep, but mostly with black cattle, for obtaining the command of a greater increase of manure, and not a few are consumed by milch cows, and they are a great acquisition for that purpose: dairies, upon a pretty large scale, have of late been adopted by several, with what success I cannot say; but as an appendage

age to a farm, as far as my observation and experience has gone, a few milk cows, well attended to, have always proved advantageous. The acquisition now, of having green meat through the winter and spring, for milk cows and young stocks, must be great, as thus they may be made of double value, and the quantity of dung greatly increased, when well fed and littered with straw, compared to their situation formerly, when they had nothing to eat but straw, and not a stalk to lie on.

It is remarked, that the pasture grass in this county, in general, is kept shorter than in most others; a loss so obvious, that it is surprising it should be persevered in. Three sheep or cattle well fed, will yield more profit than five half fed, and the uneaten grass never lost.

Where lands depend on pasture, for producing crops of corn, overcropping ought never to take place, and more attention ought to be paid for procuring a good sward than for raising a crop of hay. Plenty of white clover and rib grass is found to be the most effectual for that purpose. Too much red clover is apt to destroy other seeds; and yellow clover is not much to be depended on, thriving only in some grounds, and even in these appearing one year, but not another, and, in this county, remaining permanent only in particular soils. Free gravelly soils are those where it continues longest, nor is cattle fond of it.

There is another situation of arable land in the higher parts of this county, that differs a good deal from the former, consisting of a small part called Croft, that, for time immemorial, has had laid on it all the dung made on the farm; and the remainder, Outfield, chiefly plain grounds, the most of which have been ploughed. Great part of these, 30 or 40 years ago, were all covered with heath, or a coarse grass, that afforded little pasture. When first limed and broke up, this soil often produced good crops of oats for a few years, but in general was kept in tillage, while it yielded what was worth the sowing for; and though no grass seeds were sown, as indeed it could have been of no service, the sward was somewhat mended, but still coarse, thin, and of little real value.

third

In many instances they have undergone a second, some a third and fourth breaking up ; but the oftener, the produce becomes the less, except where folded. A second liming has seldom any effect. By all this additional cultivation, without manure, the ground is only more exhausted, and when left again in grass, the sward is nothing mended.

A good deal of these fields are now inclosed, and some of them derive great advantage from being so ; but in many instances, little benefit is reapt but the trifling shelter that is obtained from ill-thriven hedges ; it being impossible, on some of these grounds, to rear them to be proper fences, besides not having water for the stock to drink. There are hundreds of acres in the high parts of the county, without a drop of water for months.

Shelter, in these extensive open grounds, would be of the utmost importance ; and though hedges cannot be raised to answer that end, stripes of planting, in cross directions, might ; as trees are to be found growing much higher than many of these grounds, and there are many instances, of various kinds of trees thriving, where thorns do not.

There is little prospect, that any considerable part of those lands, can soon be made to produce a better sward of grass ; yet great part of them, in time, surely might. The heaviness and wetness of the soil, the want of manure, (having little more than is sufficient for the old croft land, and lime being found to operate very poorly in most places when repeated,) the lateness of the harvest, and early winters, which make the access to winter crops very difficult, are all against winter feeding being carried to the same extent, as where land lies in a better climate, and is of a dryer and freer nature. Yet there cannot be the smallest doubt, but that something more might be done than is. In place of laying all the dung on the barley crops, and little spots of wheat, were it to be made use of for raising green crops, that admit of the ground being thoroughly wrought, as turnips, green kail, and yams, where the soil will answer, and with these to keep on, for two or three months, the few half-fed cattle they are accustomed to sell off in autumn, the farm cows, and young
(B) stock,

stock, would all be of double value. If fed plentifully through the winter and spring, compared with what they are, when getting nothing but a little straw through the night, and chill'd through the day, in cold and rainy weather, picking a scanty subsistence, an increase of manure would be got of course; and where these green crops grew, to sow in with the first crop of corn, 6 lib. of white clover, and the same quantity of rib grass with rye grass, a little red clover, and taking never more than one crop of hay, double the pasture will thus be produced, than if no other seeds were sown but rye grass and clover, and the ground of course will be sooner fit for breaking up, and will produce every crop more abundantly: and when part of the outfield is broken up, after folding or liming, in place of doing so with detached fields, or parts of a field, and cropping the ground till quite exhausted, would it not be much better to fold or lime a part nearest the infield, and after the first crop to prepare the ground and sow turnips? If a little dung could be spared, it would be of great importance, not only for increasing the quantity of grass, but for improving the quality; as every effort ought to be made that tends to procure an increase of that valuable article. Compost dunghills should be made, where stuff can be got for the purpose, and as little of the urine of the cattle lost as possible; and tho' dung will not bear the expence of being carried to the distance of eight, nine, or ten miles, horn shavings and woollen rags will. By attention to procure what is to be got of these, with a proper application of the urine, either in compost dunghills, or otherwise, a part of these unproductive lands might be prepared for growing turnips, and afterwards laid down with white clover, rib, and rye grass seeds, not to be cut nor suffered to be potched the first year, that would ever after have a sward of grass, very different from what it was, and continue to be good pasture ground.

The sheep walks in this county, vary as much as the arable lands. Some are connected with arable land; upon some of which turnips are raised for feeding the sheep, but not yet to great extent; few hitherto have been fattened off

turnip

turnip fields in this county, though there are many farms well suited to the raising of turnip, where large flocks of sheep are kept; those at a distance have not yet extended much into the practice, and those who have sheep walks near Edinburgh, find from thence a better market, reserving in general only a few for the spring, which, with the sown grass, feed off the early lambs, and if the grass is not kept too bare, the crop of hay is not much hurt.

There are many sheep walks that consist chiefly of hills and muirs, where there is little arable, in proportion to the large flocks that are kept, and where all the turnip that could be raised, would avail but little. Great part of these grounds produce heath, and a long bent grass, that support the flocks throughout the winter season; which, on these grounds, are all of the black fac'd, coarse wool'd kind; and whether the Cheviot breed would thrive there as well, has never been fairly tried: but that the breed of these grounds might be improved by a little more attention, is obvious, from the herd's flock always being superior to the master's; amongst some of whom, and on pretty high grounds, crosses with the white faced kind are to be found equally good thrivers with the others. To ascertain this point, is an object worthy of the attention of the British Wool Society. A small heathy hill farm, for the purpose, could not incur great expence.

How inclosing is to affect population, depends upon the use that is made of the land afterwards. If, in a proper manner, inclosing and pasturing is made subservient to tillage, more corn will be raised than would have been otherwise; and of course, inclosures are favourable to population. But if, after inclosing, the ground is all laid into grass, and kept for grazing, such a system must unavoidably depopulate. One farmer, with a herd or two, can make all that is to be made of a possession, that occupied the attention of two or three farmers, many labouring servants, and their families, and perhaps a carpenter or wright, a smith, besides hay-makers, reapers, and all the various sorts of tradesmen and others to whom they gave employment.

The effects of the little additional employment given during

ring the time of inclosing, dressing the ground, and laying it down with grafs seeds, are soon over, and in a few years, extensive fields, that gave occupation and food to numbers, appear almost uninhabited.

Light will this country be in the scale of nations, if our lands come to be chiefly occupied by shepherds, and if our mnufacturers have to depend upon a foreign land for the bread they are to eat, and on their own population alone, for a supply of hands to carry on their business.

THO. SCOTT.

APPEN.

APPENDIX.—No. 2.

*Observations on the HUSBANDRY of SCOTLAND,
by Mr ABRAHAM JONES, a Norfolk Farmer.*



PROPOSING, in consequence of an excursion to Scotland, to take a farm in that country, I was thence led, to pay more particular attention to the system of husbandry pursued there, than otherwise I should have done; and though unaccustomed to write for the press, yet very readily comply with the request made by the President of the Board of Agriculture, of shortly stating any observations which may have occurred to me, regarding the agriculture of this country.

The following are the particulars, which I think more immediately require the attention of the Scotch farmers.

1. A closer attention to keep their servants and labourers at work, seems to be highly necessary. In Norfolk, they work hard for 10 hours in a day. Wages usually 1s. 2d. excepting between Mid-summer and Michaelmas, when they get 1s. 6d. and in the busy time of harvest 2s. 3s. and sometimes as high as 4s.

2. They seem to me to be deficient in regard to ploughing a sufficient quantity of land in a day. In Norfolk, with two horses, they will plough two statute acres properly in a day. I have seen nothing like that in Scotland, and, in general, they plough it badly.

3. I do not approve of their mode in Scotland, either of laying down grafs, or of making hay. The rye grafs they fow feems to be the fame with what they call *Blubber grafs* in England; the quality of which is infinitely inferior to the true rye grafs. In Norfolk, even rye grafs is not liked, as it is confidered to be a fevere robber of the ground, and fitter for training up, and fheltering the young clover, than any thing elfe. A greater quantity of white clover ought to be fown in Scotland, if the ground is to be kept above one year in grafs, as it is more permanent than the red.

As to hay, the Scotch mode of making it feems to me extremely erroneous. It fhould be turned only until it is dry, and in hot dry weather, one turning is fufficient; then cock it up for a few days, and get it put into long narrow ftacks, with a hole in the middle, from the bottom to the top, to draw out the heat. By following that plan, they would always have green, well flavoured, and good hay.

4. As to improving land, if it is wet, fmall inclofures may be advifeable; but if dry, large ones are preferable. The land alfo fhould be fallowed, cleaned, and levelled, before any lime is laid on; and if fome dung could be mixed with the lime, fo much the better.

So far as it is poffible for me yet to judge, I think the Norfolk wheel-ploughs might answer in Scotland for ploughing level lands, if the foil is not very ftrong; but the fwing-plough is better for unlevel, or ftrong land.

I think that horfes are preferable to oxen, and would ufe them, were I to take a farm in Scotland. Horfes can do all the work of a farmer of every defcription, which oxen cannot, at leaft to the fame advantage. For inftance, all kinds of land, at certain times, is the better for quick harrowing, to make it ready for fowing grain; the ftrong lands to break the clods, and the light land to feparate the mould from the weeds, which prevents their vegetation. But with oxen you cannot harrow quickly; befides, it is often neceffary to travel quickly with empty carts in harveft time; to expedite the bufinefs of a farm, or to carry grain to a diftant market for fale, or to fend for manure, fo as to have but one day's journey.

ney. On all such occasions, horses are preferable, and, on an average, it may be stated, that two good horses will do as much work to a farmer as four good oxen.

The common run of Scotch working horses is inferior to the English ; but I found, in the west of Scotland, a breed of horses, for draught, superior to any thing I have ever seen even in Suffolk. The Suffolk horses will not draw above 18 Cwt. up hill ; the horses in the west of Scotland will draw 24 Cwt. without requiring better food, or more in quantity.

There are several breeds of cattle in Scotland ; as the Galloway, the Fife, the Argyll, and the Sky : but from all the experience I have had, I prefer the Argyll or west Highland. I consider them to be the most profitable cattle in Great Britain, for fattening. If bought at about four years old, they both grow in size, and fatten at the same time, and make a very quick return of profit. They are horned, generally black, and weigh, when fattened, about 560 lib. or 40 stone, at 14 lib. to the stone, (16 ounces to the pound.) That medium size is always sure to fetch the best price at market.

I think there can be no doubt that the climate of England is greatly preferable to that of Scotland ; and that the quality of the English grain is preferable to the Scotch. The rent of land, however, in Scotland, is certainly higher than that of England. In two respects, the English farmers might derive much benefit, from adopting the practices of the Scotch, namely, in using threshing mills, and single-horse carts.

EDINBURGH, *October*, 1795.

APPENDIX.—No. 3.

Account of the ORIGIN *and* PROGRESS *of the* BRITISH WOOL SOCIETY.



INTRODUCTION.

THE establishment of a Society for the improvement of Wool, or for any other purpose of a similar nature, is undoubtedly no new idea. Various institutions of that sort have taken place in all countries; but to carry on such an institution with energy and success, has not been accomplished upon all occasions. A brief account of the rise and progress of the British Wool Society, therefore, cannot fail to be acceptable to the public, and naturally comes to be included in the report of Mid-Lothian, as it was originally constituted in that county.

It is probable that the Society will, some time or other, draw up a complete account of its origin and progress, and will communicate to the public, the great mass of valuable information which it has accumulated since its establishment. At present, it is merely intended to give a short sketch of the most important particulars connected with the institution.

It was only on the 31st January 1791, that several respectable noblemen and gentlemen assembled together, in consequence of a circular letter from Sir John Sinclair, the founder of the Society, and first constituted themselves into a Society for the improvement of British wool. In Sir John's address to the gentlemen there assembled, (which was afterwards printed by order of the Society,) the objects of the proposed institution, the means by which they were the most likely to be attained,

tained, and the material advantages that would result from it, were clearly pointed out. It may be sufficient, at present, to refer to that address, for farther information respecting the original constitution of the Society.

In order that the Reader may be enabled to form some idea, of the energy and spirit, with which this Society was conducted, we shall proceed to give a short abstract of its transactions, for one year, from the date of its institution, ending on the 31st January 1792.

The principal objects which the Society naturally had in view, during that year, may naturally be comprehended under three heads.

1st, To collect specimens of the best breeds, which Great Britain at present afforded, in order to ascertain to what perfection sheep had been already brought in these kingdoms.

2^{dly}, To procure from every country, distinguished for the quality of its sheep and wool, specimens of the different breeds it possessed, for the purpose of trying how far the original breed, or a mixed breed between them and the native sheep of the country, could thrive in Scotland. And,

3^{dly}, To disperse as much as possible, all these breeds, both foreign and domestic, over the whole kingdom, where proper persons could be found fit to take the charge of them, in order to try experiments on a more extensive scale, than the Society itself could do, to spread information upon the subject, and to excite a spirit for the improvement of the breeds of sheep, and of wool, in every part of the country.

The following is an account of the different flocks, which, in the course of the year 1791, were acquired by the Society, for the purposes above mentioned, together with the manner in which they were distributed.

1. *The HOPETOUN Flock.*

The original flock belonging to the Society, (which had been previously collected, in the view of such an institution, by Sir John Sinclair,) were, for some time, kept at Mr Thomson's of East Duddingston, but afterwards, for several months,

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at

at the Earl of Hopetoun's, without any expence to the Society. For the sake of distinction, this original stock may therefore be called the *Hopetoun Flock*.

CHARGE.

	Rams.	Ewes.	Lambs.
Spanish rams from Lord Sheffield, -	2	0	0
Herefordshire ewes from ditto, - -	0	8	0
Lambs from one of the Spanish rams and the Herefordshire ewes, - -	0	0	8
1-half Spanish and 1-half Southdown ewes,	0	5	0
Lambs from ditto, and a Spanish ram,	0	0	5
1-fourth Spanish, and 3-fourths Southdown,	0	7	0
Lambs from ditto, and a Spanish ram,	0	0	6
Cheviot ewes from Mr Redhead, -	0	20	0
Lambs from ditto, and a Spanish ram, -	0	0	19
Lomond hill ewes, - - - -	0	10	0
Lambs from ditto, and a Shetland ram,	0	0	8
Shetland rams, ewes, and lambs, -	3		4
	5	55	50

DISCHARGE.

	Rams.	Ewes.	Lambs.
Sold to Lord Hopetoun, one of the Spanish rams, the eight Herefordshire ewes, and their Lambs, - - - -	1	8	8
Presented to Lady Hopetoun in name of the Society, a Shetland ewe and lamb, -	0	1	1
Died at Hopetoun-House one of the Lomond-Hill ewes, - - - -	0	1	0
Purchased by Sir John Sinclair, and sent to London as a specimen of the best Scotch breeds of sheep, a Shetland ram and ewe, and a Cheviot ewe, - - - -	1	2	0
Sent to Mr Lawson of Pittlethie, in the parish of Leuchars, to cross with the Tent-Moor, or Seuchie-Dike breed, a Shetland ram, - - - -	1	0	0

Carry forward, 3 12 9
Sold

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	Rams.	Ewes.	Lambs.
Brought forward,	3	12	9
Sold for three guineas to Mr Redhead, &c. (for trying experiments in the Cheviot hills,) the other Spanish ram, -	1	0	0
Sent to the Cheviot hills, where they are to be wintered gratuitously for the Society, 19 lambs, the crosses between the Spanish and Cheviot breeds, and three lambs of the cross between the Spanish and South- down, - - - - -	0	0	22
Sold to Mr John Aitchison of Skirling, four Lomond-Hill, and two Cheviot ewes,	0	6	0
Shetland ewes now at North Merchiston, belonging to the Society, one under the experiment of twice clipping and cloath- ing, - - - - -	0	2	0
Sent to Cramond Island, a Shetland ram, a ewe, and three lambs, - - - - -	1	1	3
Sold to Messrs Culley, three ewes, 1-half Spanish, 1-half Southdown, - - - - -	0	3	0
Remaining to be accounted for with the ge- neral flock of the Society, - - - - -	0	31	16
	5	55	50

2. *The D'AUBENTON Flock.*

In consequence of a correspondence between Mons. D'Aubenton, related to the celebrated Buffon, and Sir John Sinclair, that gentleman sent over to the Society, ten rams and five ewes of the real Spanish breed, which had been originally intrusted to his care by the King of France. After meeting with many obstacles in their journey from Burgundy, in particular at the custom-house at Brighthelmstone, where they were stopt, and threatened to be slaughtered for the use of the poor, on some old law, they were released on application to the Treasury, and Board of Customs, at London, and at last were safely landed at Leith. And Lord Sheffield very obligingly sent, at the same time, to the Society, four rams and

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six ewes, of the South down and Spanish breeds. This may be called the *D'Aubenton Flock*. Monf. D'Aubenton has, as yet, neither made any charge for the 15 sheep he sent, nor intimated that they were intended as a donation.

CHARGE.

	Rams.	Ewes.
Sheep of the Spanish breed sent by Monf.		
D'Aubenton, - - - -	10	5
Ditto partly Spanish, and partly South down, sent by Lord Sheffield, - -	4	6
	14	11

DISCHARGE.

	Rams.	Ewes.
Purchased by Sir Gilbert Elliott, -	1	0
Lord Roseberry, - -	1	0
Mr Proctor, -	1	0
Sir George Douglas, -	1	0
Mr Scott of Lethem, -	1	0
Lord Buchan, - -	1	0
Mr Swinton of Kimmergham, -	1	0
Lord Hopetoun, - -	1	0
Lord Daer, - -	1	0
Mr Craik of Arbigland, -	1	0
Mr Culley, - -	0	2
Mess. Laing, &c. (Cheviot farmers) of those sent by Lord Sheffield, - -	4	4
Balance remaining with the general flock of the Society, - - - -	0	5
	14	11

3. *The HEREFORDSHIRE and WELSH Flock.*

Mr Bishton of Kilfall in Shropshire, having very liberally offered to the Society, a present of three Herefordshire rams, accounted by many the best breed in England: it was thought advisable to accept of so generous an offer, and, at the same time,

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time, to order 150 ewes of that breed, and two ewes of the Long Mountain breed, which is reckoned the best in Wales, to be sent with them. For the sake of distinction, this is called the Herefordshire and Welsh flock.

CHARGE.

				Rams.	Ewes.
Herefordshire breed,	-	-	-	3	150
Welsh ditto	-	-	-	0	2
				3	152

DISCHARGE.

				Rams.	Ewes.
Purchased by Lord Roseberry,	-	-	-	1	30
Lord Hopetoun,	-	-	-	0	12
(including 1 Welsh ewe)					
David Dundas, Esq.	-	-	-	1	20
Duke of Buccleugh,	-	-	-	0	15
Mr Laing,	-	-	-	1	10
Mr Culley,	-	-	-	0	15
Sir George Douglas,	-	-	-	0	4
Lord Buchan,	-	-	-	0	4
Mr John Finnie,	-	-	-	0	5
Mr Swinton of Kimmergham,	-	-	-	0	10
Mr Scott of Lethem,	-	-	-	0	5
Lord Daer,	-	-	-	0	3
Sir Gilbert Elliott,	-	-	-	0	4
Remaining to be accounted for, with the general flock of the Society, including one Welsh Ewe,	-	-	-	0	15
				3	152

4. *The Great CHEVIOT Flock.*

After having got every necessary information that could be procured upon the subject, the Directors were satisfied, that the Cheviot breed of Sheep were likely to be preferable to every other, for the hilly parts of Scotland. And in order, tha

that the nature and excellence of this breed might be more generally known, they resolved to purchase a flock of 50 tups and 100 ewes, and to disperse them all over the northern parts of the kingdom. The manner in which they were distributed is as follows:—

CHARGE.

	Rams.	Ewes.
The great Cheviot flock sent north under the care of John Riccalton, -	50	100

DISCHARGE.

	Rams.	Ewes.
Purchased by Capt. M'Kay of Scots-town,	1	4
Mr Haldane of Gleneagles for self and others, - -	5	10
Sir William Erskine, -	1	2
Sir John Henderson, ditto,	2	4
Earl of Leven, - -	1	2
Mr Drummond of Perth	1	2
George Dempster, Esq. -	1	2
Earl of Breadalbane, -	1	2
Thomas Elder, Esq. of Forneth,	1	3
Mr William Inglis, (for Sir William Gordon and others in Murray and Invernessshire)	9	18
Mr M'Leod of Cadbol, -	1	2
Sir James Grant - -	1	2
James M'Pherson, Esq. M. P.	1	2
James Falconer of Pitmain,	1	2
Mr Gillander, - -	1	2
Sir Charles Ross, - -	1	2
Colonel Baillie, - -	1	2
Andrew Davidson of Over Skibo,	1	2
Mr Frazer of Lovat, -	1	2
Corrimony, - -	1	2

Carry forward, 33 69
Earl

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	Rams.	Ewes.
Brought forward,	33	69
Earl Gower, - - -	1	2
Dugald Gilchrist, Esq. -	1	2
Mr Gordon of Carrol, -	1	2
Mr Gordon of Embo, -	1	2
John Grant, Esq. - - -	1	2
Balance remaining to be distributed in Caithness and Strathnaver, and which will be accounted for by Sir John Sinclair, -	12	21
	50	100

To the credit of the Cheviot breed, it may be remarked, that both the ewes and the rams completed this long journey, from the borders of England to Caithness, without any material accident, (some accidental lameness excepted,) and that the whole expence of driving them, (maintainance, tolls, ferries, &c. included,) did not exceed 1s. 1 $\frac{3}{4}$ d. *per* head.

5. *The Smaller CHEVIOT Flock.*

The greater Cheviot flock having been much approved of, and some persons in the neighbourhood of Edinburgh, Glasgow, &c. wishing to have a trial of that breed, though the price, from the great demand, had increased considerably, it was thought advisable not to lose a season, in gratifying public-spirited individuals, with an opportunity of making so important an experiment. For that purpose, first 50 ewes, and afterwards seven rams, and 23 ewes, were purchased from the Cheviot farmers, and distributed as follows :

CHARGE.

	Rams.	Ewes.
Purchased from Mess. Redhead and Laing, to be delivered, free of all other expence, at a guinea <i>per</i> head, - - -	0	50
Purchased from ditto, 10th Sept. 1791, -	7	23
	7	73

DIS-

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DISCHARGE.

	Rams.	Ewes.
Sold to Lord Roseberry, - -	0	30
Sir Alexander Ramsay, -	2	0
Mr Swinton of Kimmergham,	1	10
Mr Finnie, - - -	1	0
Mr Tweedie of Oliver, -	1	2
Mr Irvine of Polmoodie, -	1	2
Sent to Mr Archibald Graham of Glasgow, on account of Mr Fisher of Dishmont,	1	20
Balance carried to the general account of the Society, - - - -	0	9
	7	7

6. *The MOCHRUM Flock.*

The directors understanding that a very excellent breed of native sheep existed at Mochrum in Galloway, they requested Lord Daer, a Member of the Society, to take the trouble of procuring a specimen of them. Twenty ewes were accordingly sent by his Lordship, which are accounted for as follows:

CHARGE.

	Ewes.
Sent to the Society by Lord Daer, - -	20

DISCHARGE.

	Ewes.
Sold to Mr John Aitchison at Skirling, -	4
Died at Bowbridge, - - - -	1
Remaining on hand, - - - -	15
	20

7. *The OXFORD Flock.*

The late Earl of Oxford very generously sent the Society a present of three rams of the Norfolk, crossed by the Cape of Good Hope breed. The Society not having any means of keeping them separate from the rest, they were sold to Mr John Aitchison of Skirling, who proposes trying the experiment

ment, how far this breed is likely to answer in this country. Mr George Robertson, at Granton, was so obliging as to take care of these rams for a considerable space of time, without putting the Society to any expence.

8. *The ROMAN Flock.*

Mr Isaac Grant, junior, of Leghorn, in conjunction with Mr Sibbald, merchant at Leith, were so obliging, as to present to the Society a Roman, or Apulian, ram and ewe. The ewe unfortunately died on the passage, but the ram arrived in safety. The Duke of Buccleugh has very handsomely taken the charge of the above ram, and of 19 ewes sent with him, for the behoof of the Society. This flock consists of the following particulars :

	Ram.	Ewes.
1-4th Spanish, and 3-4ths Southdown ewes,	0	4
Cheviot ewes, - - - - -	0	15
The Roman ram, - - - - -	1	0
	1	19

9. *The SWEDISH Flock.*

Mr Baron Seton of Preston, in Linlithgow-shire, in order to satisfy the Society that fine wool could be produced in the most northern climates, was so obliging as to procure for the Society, a ram and 2 ewes of a Spanish breed, which had been for some time kept in Sweden unmixed with any other. They arrived in safety, and are now with the flock of the Society at Bowbridge, for the inspection and satisfaction of the members.

CHARGE.

	Ram.	Ewes.
Sheep imported from Sweden, - - -	1	2

10. *The TWEEDDALE Flock.*

Many farmers in Tweeddale being disposed to try the Cheviot breed of sheep, if they were found, upon experiment, likely to answer that part of the country; in order to remove all doubts upon the subject, it was resolved to purchase

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for

for the Society, 30 Cheviot Hogs; and Mr Kerr of Kerr's-field, Mr William Murray, and Mr Gray, agreed to take each of them ten, and to *hirsel* them with their own hogs, without making any charge to the Society. They are now under the care of these gentlemen, and, by the latest accounts, they are thriving as well as could be wished for.

11. *The SEUCHY-DIKE, or TENT-MOOR Flock.*

In the parish of Leuchars in Fife, there is a small breed of sheep, much resembling the Shetland, though their wool is not quite so fine. The Society being disappointed in an importation they expected from Shetland, and unwilling to lose, for one season, the advantage they enjoyed, for trying experiments from the possession of Cramond Island, so handsomely given them for ten years by Mr Ramsay of Barnton, they resolved to purchase 100 ewes of that breed, and to cross them with Shetland rams. But the island not being fit for the maintenance of quite so many, 40 were disposed of to Lord Hopetoun. The remaining 60 are now in the island, with the Shetland rams; and it is believed, that the cross will produce a very valuable and fine-woolled breed. Two Shetland rams, a present from Lady Dundonald, were also sent to that island.

12. *Mr CONYNGHAME's first Flock.*

The Right Hon. William Conynghame of Ireland, very generously presented to the Society, 5 rams of a real Spanish breed, but which had been for some time in Ireland. They were very unfortunate in their voyage, being three weeks between Belfast and Greenock; in consequence of which one died on the passage, and another after its arrival in Scotland; the other three, however, are likely to do well. One of them is disposed of to the Duke of Argyll, a second to the magistrates of Campbeltown, and the third to Lord Leven; who are crossing them with the best breeds on the eastern and western coasts of Scotland.

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13. *Mr CONYNGHAME's second Flock.*

The west of Scotland, and Galloway in particular, seem to be admirably adapted for fine-woolled sheep. And Mr Conynghame, having very liberally offered still farther to promote the views of the Society; it was resolved to request of him to dispose of a part of his flock to be stationed in Galloway. Admiral Keith Stewart, very obligingly sent his agent, Mr Palliser, who is peculiarly skilled in sheep, to choose them; and in consequence thereof, there was brought from Ireland, no less a number than six real Spanish rams, seven real Spanish ewes, 15, 3-4ths bred, and 16, 1-half bred Spanish and Irish ewes: a flock, which, it is hoped, will soon cover the west of Scotland with fine-woolled sheep. Mr Conynghame has as yet made no charge for this flock; but the Society will probably be indemnified from any charge that may be made, by stating to the account of those by whom they have been purchased, 50s. for each ram, and 25s. for each ewe; deducting from that price the expence of Mr Palliser's journey, and the charges of bringing the flock from Portpatrick to Galloway House, which amounted in all to L.17:17:0. The flock was distributed as follows:

CHARGE.

	Rams.	Ewes.
Total amount of Mr Conynghame's second flock, - - - - -	6	38

DISCHARGE.

	Rams.	Ewes.
Purchased by the Hon. Admiral Keith Stewart, - - -	1	4
Lord Daer, - - - - -	1	2
Mr Heron of Heron, - - -	1	2
Mr Miller of Dalswinton, - - -	1	2
The parent flock from which this part of Scotland is to be supplied with fine-woolled rams is left with Lord Galloway, and consists of - - -	2	28
	6	38

APPENDIX.

14. *The SHEFFIELD Flock.*

The sheep which Lord Sheffield has at different times sent to the Society, having been much liked for their shape as well as for their fleeces, it was thought advisable to secure an additional number as early as possible, as the fleeces at next clipping will indemnify the Society for their *keep*: and, as in the meantime, they will be inured to the climate of Scotland. The following sheep sent by his Lordship, arrived safely at Leith in the month of December last, and are now at Bowbridge.

CHARGE.

	Rams.	Ewes.
A 2 1-half year-old ram, 1-half Spanish, 1-half Southdown, - - - - -	1	0
A real 18 months old Southdown ram, - - - - -	1	0
Ram lambs, 3-4ths Spanish, 1-4th Southdown, - - - - -	6	0
Ewe lambs, partly Spanish, but mostly Southdown, - - - - -	0	18
	8	18

DISCHARGE.

All this flock are now at Bowbridge, and likely to do well, notwithstanding the lateness of the season, at which they arrived.

15. *The ROYAL Flock.*

His Majesty has been graciously pleased to honour the Society with a present of two rams, one of which is now with the flock at Bowbridge, and the other at Mr Dundas's at Wimbledon, in consequence of whose application they were obtained. As it was by mistake, that the ram now at Wimbledon was not sent from Windsor with the other, the Society may depend upon receiving him in the course of the ensuing Spring or Summer, with, it is hoped, some additional marks of his Majesty's royal approbation.

CONCLUSION.

It is evident from what is above stated, that every possible exertion has been made, to spread a spirit for the improvement of wool, and to disperse the proper breeds of sheep for that purpose, all over the kingdom. The number of fine-woolled rams which have been imported, amounting (young and old) to above 40, is certainly as many as could possibly be looked for, in the short space of one year.

From various quarters, much important information, as to the proper management of sheep, has been transmitted to the Directors. Very flattering accounts are received, from different parts of the country, of the success with which the various experiments, recommended in the publications of the Society are likely to be attended. In short, there is every reason to believe, that nothing is wanting, but a continuation of the same exertions on the part of the Society, in order to secure to Great Britain the important objects for which it was constituted.

GENERAL

GENERAL VIEW OF THE TRANSACTIONS OF THE SOCIETY AND THE STATE OF ITS DIFFERENT FLOCKS AT PRESENT.

IT appears from the preceding paper, that the Society has acquired, by donation or purchase, in the course of the year 1791, about 800 sheep of different sorts and ages, many of them from foreign countries, particularly from such as possessed any breed of sheep distinguished for the quality of their wool. Of these, about 555 have been dispersed all over Scotland; and there still remain 245*, to which, before the month of July next, there will probably be an addition of about 150 lambs; so that the flock belonging to the Society will then amount to about 400. A number, (joined to those already distributed, and many which are expected in the course

* The flocks belonging to the Society, are established as follows:

	Sheep.
At Bowbridge, - - - -	101
At Dalkeith-House, - - - -	20
In Tweeddale, - - - -	30
In the Cheviot hills, - - - -	22
On Cramond Island, (about) - - -	70
At North Merchiston, - . - -	2
	—
	245

course of the ensuing season from different countries in Europe, some from Africa and the East Indies,) sufficient, in the space of a few years to cover every part of Scotland, with fine-woolled sheep.

It is impossible to produce, in the annals of history, an instance of so much having been effected, in regard to a single object, by a Society of private individuals, in so short a time. Nor was this all; in the course of the same year, Mr Andrew Kerr, a very intelligent sheep farmer on the borders of England and Scotland, was sent, at the expence of the Society, to examine into the state of sheep-farming along the eastern coast of Scotland, and the interior parts of the Highlands. His Tour was printed by directions of the Society, and contains the first intimation of the possibility of the Cheviot breed thriving in the north of Scotland. During the same year also, the celebrated Sheep-Shearing Festival was held at Newhall's inn, near the Queen's-ferry, on the 1st of July, the following account of which, drawn up at the time, it may not be improper to record in this place.

“ About fifty ladies, and seventy gentlemen of rank and distinction were present, who were received, as they arrived, by Sir JOHN SINCLAIR, the Chairman of the Society. The company began to assemble about one o'clock, and were conducted to a grass-plot in a garden belonging to Mr Dundas of Duddingston, adjoining to the inn. In the centre of the green, a pole was erected, with cross branches, on which were suspended specimens of various kinds of wool; and in particular some dressed skins of the Shetland breed of sheep, with the wool adhering, which were greatly admired. Latin inscriptions appeared on a tablet fixed at the top of the pole, applicable to the occasion of the meeting. There were sheep of various breeds and countries collected in the garden, and on the neighbouring banks, viz. Spanish, English, Scotch, and Shetland; and to add to this groupe, Mr Dundas of Dundas sent there some sheep from Abyssinia. The sheep-shearing began about two o'clock, and the dexterity and neatness with which Mr Culley's clipper performed, was much praised. The wool of the various breeds was exhibit-
ed,

ed, with labels denoting the kind and peculiarities of its texture. During the sheep-shearing a band of music attended, and played a great variety of favourite Scotch airs adapted to the occasion.

“ The ladies were in general dressed in white muslin, with flowers, and various-coloured ribbons; and each bore a shepherd's crook, decorated with taste and fancy. The day being favourable, the appearance on the green of so much beauty and elegance, afforded a spectacle at once pleasing and interesting. And here none was more distinguished, than the venerable and patriotic Countess Dowager of Dundonald, whose hat was decorated with a bandeau of wool from her own flock, and dyed by herself of various beautiful vivid colours, which had a fine effect.

“ Several of the gentlemen were presented by her ladyship with cockades, and other ornaments, of this material. The gentlemen were dressed variously, as taste and fancy suggested. Some of them appeared in cloth made from their own flocks, with crooks on their buttons, &c. and some of the ladies in gowns of their own spinning.

“ A little after four o'clock, the company left the garden, and sat down to an elegant entertainment in a large room adjoining to the inn. When Sir John Sinclair gave “ The Royal Shepherd of Great Britain, and success to his Flock; ” a signal was made to the Hind frigate, which lay at anchor at a little distance, and a round of 21 guns was fired in honour of so popular a toast. A number of other loyal and patriotic toasts were afterwards given, and the *amor patriæ* appeared to glow so much in every breast, that no assemblage could have exhibited more harmony and happiness than appeared on that occasion. After tea and coffee, the ball was opened by the Countess of Hopetoun and Sir John Sinclair, and continued till near twelve, when the company separated, highly pleased with the day's entertainment.”

Their country is much indebted to the noblemen and gentlemen who have established a Society for promoting such important objects; and, in this instance of the Festival, they have pleasantly united the *dulce cum utile*.

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Having so fully detailed the transactions of the year 1791, it seems unnecessary to enter, with equal minuteness, into those of the succeeding years; it may be sufficient to remark, that in the year 1792, Messrs Redhead, Laing, and Marshall, were sent by the Society, to make a survey of the state of sheep-farming through some of the principal counties of England; the result of which was also published by the Society, and contains more information on the subject of the different breeds of England, than any work hitherto published; and in 1794, Mr John Naismyth was sent on a tour through the southern districts of Scotland, which completed the circuit of almost the whole kingdom.

Thus a few private individuals, unaided by the public purse, had boldness enough to undertake ascertaining the comparative value of the different kinds of sheep in their own country, and to introduce some of the most celebrated breeds of other countries, and succeeded in the spirited attempt.

It is impossible, in this place, to state more minutely the various other transactions of the Society; to enter into any detail of the premiums given by this respectable institution, for the improvement of the celebrated Shetland breed, or to explain how, as if it were by magic, in a country where the manufacture of wool was little known, articles manufactured of that material were made, rivalling, and in some cases surpassing the most celebrated fabrics of other countries. A war having unfortunately arisen, it became impossible to pay the same attention, or to carry on with the same success, novel enterprises; even old establishments often fall a sacrifice, amidst the horrors of war. The utmost that the British Wool Society could expect to do, was to preserve the institution in such a state, that when peace was happily restored, it might revive with double energy and spirit. In the interim, it may be sufficient to give the following observations on the different breeds of sheep, belonging to the British Wool Society.

SPANISH BREED.

This breed is completely domesticated, and is supposed never to have been mixed. They are ill shaped; the skin

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loose and long. The rams of the Society are horned, but the ewes not. Weight of the carcase, when fat, about ten pounds per quarter. Wool from 2 lb. to 3 lb. per fleece, and from two 1-half to three inches in length, very fine, and of a close staple. They arrive at perfection at four years old, and lamb once in the year, in the month of January; have at a birth, one lamb, which is well covered with wool. It is proper to house them in winter, and feed them with corn, hay, and turnip. They are subject to the rot, and foot-rot.

HEREFORD.

This native breed is completely domesticated, all polled, very hardy, white faced, and well shaped; weight of the carcase, when fat, from 10 lb. to 14 lb. per quarter. Hind and fore quarters, for the most part, equal in weight, and the mutton excellent. Weight of the wool, from 1½ lb. to 2 lb. per fleece: the wool is fine, short, and close in the staple, good for making fine broad cloth. The sheep arrive at perfection at four years of age; lamb once a year, (having commonly one lamb at a birth,) in January, February, or March; the lamb not well covered with wool. The lambs, owing to the early season of the year, must be kept in the house, and the ewes fed with hay and turnip. But if the rams are kept from the ewes till November, the lambs are produced in April, and need not be housed. The sheep are subject to no disease, but the scab and foot-rot. They are clipped once in the year, commonly about the end of May, and beginning of June.

SOUTHDOWN.

This native breed is supposed to be pure. They are domesticated completely; are very hardy, and well adapted for a hilly country; they are dun and some of them blackfaced, polled, and destitute of wool on their foreheads. They are strong, long bodied, handsomely shaped, and have 13 ribs on each side, but rarely 14. Weight of the rams, from 14 lb.

to 18 lb. per quarter; and the ewes from 10 to 14 lb.; hind and fore quarters nearly equal; wool from 2 lb. to 3 lb. per fleece, very fine, short, and close, best adapted for being manufactured into fine cloth. The sheep are at perfection at four years old; they lamb once in the year, commonly in January, February, and March, mostly one lamb at a birth, altho' some have two. The lambs are not well covered with wool, which circumstance makes it necessary to have them kept some time in the house, or under the shade. Were they to lamb in April, the lambs need not be housed, and they would thrive well. Sheep fed with hay and turnips in time of a storm. Subject to no disease but the foot-rot.

Of the Cross between a SPANISH Ram and a SOUTHDOWN Ewe.

By this mixture the wool improves, but the breed degenerates. They are not so hardy, or strong, as either of the original kinds; they are loose skinned, and do not thrive well. The average weight is 10 lb. per quarter; the wool fine and close, and the length about three inches; the weight about 2 lb. per fleece.

Of the Cross between a SOUTHDOWN Ram and a HEREFORD Ewe.

This mixture answers much better than the former. It produces a strong hardy breed, much resembling the Southdown in shape, carcase, and wool.

CHEVIOT BREED.

This native breed of sheep is quite domesticated; very hardy, thrive well, polled, white-faced, have no wool on the forehead, are long bodied, and well shaped. Weight of the carcase, from 16 lb. to 20 lb. per quarter, of the rams, and from 10 lb. to 16 lb. of the ewes. Fore and hind quarters nearly equal, the mutton good; thirteen ribs on each side,

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but some have fourteen. Wool from 2lb. to 4lb. per fleece; pure white, and in length, from two 1-half to three inches. Sheep arrive at perfection at four years old. The quantity of tallow depends on the nature of the pasture; there being some that will feed sheep that have little tallow in proportion to what they should have. But on an old rich pasture, where sheep thrive, some will have as much tallow as the weight of a quarter of the carcase. They lamb commonly in March, and have one lamb at a birth, but some will have two; the lambs are well covered with wool. The sheep are fed with hay, during a storm, in winter. Subject to no disease. Different methods have been tried to improve the wool, by crossing them with the Hereford, Southdown, &c.

Of the CHEVIOT crossed with the SPANISH.

This mixture greatly improves the fleece with regard to the quality of the wool, but the breed is not so hardy and well shaped as the originals. Weight from 9 to 12 lb. per quarter. The wool from 2 to 2½ lb. per fleece, fine and close, and from 2 to 3 inches in length,

Of the CHEVIOT crossed with the HEREFORD.

The wool is from 2½ to 3 lb. per fleece. Weight from 10 to 14 lb. per quarter; are hardy, and as well shaped as the originals.

Of the CHEVIOT crossed with the ROMAN.

This breed is stronger than the Cheviot, but little different with respect to the wool. They are all polled, white-faced, with a large high nose, and long legs; and weigh from 16 to 22 lb. per quarter. Hind quarter larger than the fore; the wool from 3 to 4 lb. per fleece; lies very compactly around them, and this, together with their uncommon height, makes them much adapted to feeding with turnip on the field, as they must travel lighter, and their wool receive less damage than

than any of a lower size. They are hardy, and at the same time very tame. They bear at the rate of three lambs from two ewes, and which are dropt pretty well covered with wool; are active and lively, and when killed at 10 or 12 weeks old, are from 7 to 9 lb. a quarter. A cross with the Bakewell has been found to improve the shape of this kind, by giving them a more square like form, and thus increasing the weight of the fore quarter.

Of the Cross between the CHEVIOT and SOUTHDOWN.

This breed is tolerably well shaped, very hardy, and carry finer wool than the Cheviot. Weigh from 10 to 15 lb. per quarter. Wool from 2 to 3 lb. per fleece. Little difference between the wool of this and the wool of the cross between the Hereford and Southdown.

SHROPSHIRE, or MORSE Breed.

This breed is native, and fully domesticated. They are very hardy, small horned, black-faced, and supposed to be pure, but not well shaped. Weight from 8 to 10 lb. per quarter. Fore and hind quarters mostly equal. Thirteen ribs on each side; the mutton good; wool from 1½ to 2 lb.; fleece very fine, best calculated for making fine cloth. Sheep at perfection at four years old. Lamb once in the year, commonly in March and April; have one lamb at a birth, but some have two, the lambs not well covered with wool. Fed with grafs and hay in bad weather. Are subject to no disease. They have, to improve the wool, been crossed with the Hereford and Southdown breeds. The former is harder than the Shropshire, and weigh about 10 lb. per quarter; little difference with regard to the quality of the wool. The latter is rather larger than the other, the quarter weighing about 12 lb.; the wool much the same, and weighs about 2 lb. per fleece.

SHETLAND

S H E T L A N D Breed.

This breed is very wild and hardy, and unmixed with any other kind. They are small in the body. All the ewes are polled, but some of the rams have horns. They are generally white in the face; and the body is of different colours, as black, grey, brown, and white, which last is preferable to any other. Weight from 5 to 8 lb. per quarter, hind and fore quarters nearly the same; weight of the wool, from $\frac{1}{2}$ lb. to $1\frac{1}{2}$ lb. per fleece. The wool is partly very fine, and partly very coarse, being mixed with black and grey hairs. There is a great difference in the length of it, some being 5 or 6 inches long, and some not exceeding 2 inches. Much of the wool is lost in the spring season; for when it rises from the skin, it falls off, and is entirely lost. The sheep arrive at perfection at 4 years of age. They have at a birth commonly one lamb, well covered with wool.

Of the Cross between a S H E T L A N D Ewe and a S P A N I S H Ram.

The breed, by this mixture, is larger and stronger than the Shetland kind. They are pretty well shaped, and feed better. The weight is from 8 to 9 lb. per quarter. The wool much improved, both in quantity and quality. It is shorter, finer, and closer in the staple, than the wool of the Shetland breed. Weighs from $1\frac{1}{2}$ to 2 lb. per fleece; and is in length from 2 to 3 inches. It possesses this excellent property, that it does not fall away when raised from the skin, but remains until the clipping season, which is commonly in June.

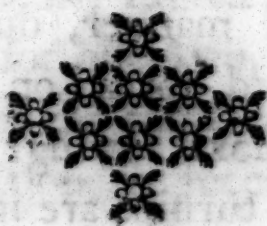
Of the Cross between a S W E D I S H Four-horned Ram and a H I G H L A N D Black-faced Ewe.

The breed hardy and strong, of a blackish grey colour; well shaped; and one of them had 3 horns, two upright and one bending

bending downward by the ear. Weight of the carcase from 14 to 16 lb. per quarter; hind and fore quarters nearly equal; wool very coarse, from 4 to 6 inches in length, and weighs per fleece about 4 lb.

Of the SOUTHDOWN Ram and SWEDISH Ewe.

By this mixture, both the carcase and wool are improved. The carcase is heavier, and the wool much finer, and closer than of the Swedish. But both are inferior to the Southdown. Weight, per quarter, about 9 lb., and the wool about 2 lb. the fleece, and in length about two inches.



APPENDIX.—No. 4.

Observations on the Agricultural State of GALA WATER, a District in MID-LOTHIAN.

BY A FARMER THERE.



THE culture of turnips is now very general throughout the district of Gala Water.

About ten years ago, there might be only about twenty acres of drilled turnips in the whole; now, there may be about two hundred and fifty acres of drilled, and about forty acres of broadcast turnips.

The drilled turnip are generally well dunged; but to those raised in the broadcast manner, dung is seldom given; in place of it, lime is applied, spread on the surface, and harrowed in immediately before sowing the seed; and this last mode is used when the turnips are intended for being fed off with sheep, on the field.

On two of the improved farms here, are raised, annually, about thirty-five acres of turnip each. Feed from twenty to twenty-four cattle each, besides giving their milch-cows, year olds, and sheep, a good many through the winter and spring.

On the other farms, cultivating from six to twelve acres, they are disposed of in much the same manner.

About two hundred and twenty cattle are annually fed with turnip.

Value of the cattle when fed, runs generally from ten to twenty pounds a head. It is not unusual to put them to feed by the time they are 3 and 1-half years old; but the practice most approved of is, to delay putting them up, till they are

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4 1-half or 5 1-half years old ; however, this last mode is only practicable in situations where the farmer can keep a numerous stock of cattle, has plenty of fodder and litter, and the necessary accommodations for housing them in the winter months : as the winters in this part of the country are too severe for keeping our home-bred cattle out in the farm yard, far less in inclosures, though both these modes have been practised here, the latter is common only with those who buy in a few small kyloes, or highland cattle, to run out during winter, straw being given them in some sheltered spot in stormy weather.

Rotation of Crops.—On some farms, a regular rotation is kept up on their best lands, of, first year, turnips, well dunged ; second, barley, or red oats, with grass seeds ; third, clover ; fourth, oats ; and, fifth year, turnips again : where this is followed, the whole dung of the farm is applied to the turnip crop. Where the farms are extensive, the rotation is generally varied, so as to go over a greater part of the farm in succession ; as, on first year, breaking up from grass, *oats* ; second, turnips, with all the dung of the farm ; third, barley, or red oats, with grass seeds ; fourth year, hay ; when the field is given up to pasture, for one, two, three, or four years, according as the extent of the farm in tillage admits of a repetition of the same rotation, in succession over the different fields of it.

Moorlands,—are generally broke up with a view of mending the pasture. In this case, after one, and sometimes two years thorough fallow, well limed, a crop of red oats is taken ; second year, turnips, broadcast ; third year, red oats, with grass seeds ; when the field is given up to pasture for so many years, until it is so much over-run with fog, as to make it necessary to take it up a second time, to refresh the pasture, by laying it down with grass seeds as before. In this case, a second liming becomes necessary.

Red oats, on our high grounds particularly, seem to be better adapted to this climate than the common oats. They ripen earlier, and run less to straw than the common oats ; a great advantage where grass seeds are sown with the oat

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crop; another is, that they admit of later sowing by two or three weeks; the season of sowing the common oats being generally too early for sowing grass seeds in this part of the country, unless in very favourable seasons.

Breed of Sheep.—Upon a few farms, the sheep have improved by crossing the native breed with the Cheviot, and long-wool'd rams, from Roxburgh and Berwickshires. Upon the best sheltered and improved lands, the crossing with the latter is thought to have succeeded best; the superior value and shape of the carcase, and greater quantity of wool produced, more than counterbalancing the advantages the Cheviot breed derive from the superior quality of their wool; besides, it is believed here, that the young sheep, from the crosses with the Roxburgh and Berwickshire rams, get sooner forward in size, and have a greater tendency to fatten than the Cheviot breed.

Upon the higher, and less improved lands, crossing the native sheep with the Cheviot rams, has, in several instances, succeeded very well, in improving the stock as well as the wool, to such a degree, as to make it an object of the farmer's attention. About a twelvemonth ago, the pure Cheviot breed was introduced at once, into one of the largest, and most highland farm in the district, and, making proper allowance for the extreme severity of last winter, are like to succeed very well.

Black Cattle.—The breed have been a good deal improved by frequent crosses with the short-horned bulls from Northumberland. And were our oxen kept to the full age, as was the custom about twenty years ago, the improvement would be more discernible, but now, they are generally put to feed before they have arrived at their full growth, for the reasons before noted. However, in this way of feeding, although it must be confessed they carry little tallow, yet it is alledged they increase a good deal in size, which, with a quicker return of money on the farmer's stock, perhaps pays him better on the whole, than in the other mode, of keeping his *cast-off* black cattle a year or two longer on hand, which requires a greater capital, and more accommodation in byres, feeding

feeding sheds, and a more extensive tillage, for raising fodder and litter, &c.

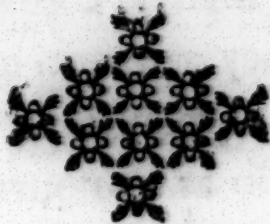
Leases.—The short leases given, of late years, are a great obstacle to any improvement.

Inclosures.—The want of these on most part of the farms is another great inconvenience.

Stells,—For shelter to the sheep in storms, are very much wanted ; few of the farms have any planted ones, though to those that have, the advantages are so evident, as should make them much more in request than they are.

Hurdling sheep on turnip, has been tried in two or three instances ; but it is thought, the practice will never become general, the climate being too wet, and the winters, in general, too severe to admit of it.

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APPENDIX.—No. 5.

Loose hints and Suggestions on LIME, Calcareous and Alkaline Substances, when employed as manures in Agriculture.

BY A GENTLEMAN WHO IS A WARM FRIEND TO AGRICULTURAL IMPROVEMENT.



THESE substances are found to be the most universal manures, and their operations are very various on different soils to which they may be applied, according to the nature of these soils.

The sterility or barrenness of ground, may depend principally upon the three following causes :

1. Some soils are rich in stamina; but are stiff, tenacious, and untractable. The matter contained in them, is crude and indigestible, and they are not in that particular condition to allow the roots of plants to extend themselves, and communicate their food so as to nourish them properly.

2. Soils may have a poison in them, that may retard, or partly destroy vegetation. It is probable, that the most common of these are a predominating vegetable acid, or sourness, an aluminous clay or earth, a sulphuric or vitriolic acid, and an iron principle. When any of these acids, but especially the latter, meet with the iron principle, they combine and form a salt of iron, which is astringent; and it is but fair to suppose, that all astringents, whether of an aluminous or iron kind, must prove highly injurious to the vegetation and growth of vegetables, by contracting and crimping up the
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the small capillary or hair-like mouths of the roots of plants that are seeking for food ; by which means they are starved, become sickly, and never perfect their seeds or fruits.

3. Good soils otherwise, are not unfrequently infected with vermin and insects ; such as a particular worm, slug, (snail) and fly, which are often very destructive to the prosperity of plants.

It is often said by farmers, that their crops are suffering, in some particular wet and cold conditions of the weather, with the worm, or are worming. The slug, or snail, is often found to be very destructive to some of the green crops, especially the turnip crop, insomuch so, that, in some seasons and particular situations, whole fields of that useful and profitable crop have been destroyed.

The smutt in wheat, is a disease in the very body of the grain, and may be the nidus, or nest, in which a particular fly or insect may have deposited its eggs ; and if such seed should be committed to the ground, the vegetative process, after a certain time, may be productive of hatching and bringing into life the insect or fly, by which the progeny will be kept up. Farmers, therefore, are, or ought to be extremely cautious about sowing grain of a smutty kind, as totally unfit for seed, the kernel being consumed, and can only produce the fly or insect that has been the cause of it. A Baron Munchauson, an Hanoverian nobleman, who has investigated this subject, has said, he has really discovered, by microscopical observations, that smutty grain contain the eggs of an insect, or fly.

If a remedy could be found to destroy this insect, or fly, or their eggs, it ought to be administered to the soil in which the smutt is apt to prevail. Some seasons seem more disposed to produce and propagate this disease in wheat than others, depending upon hitherto unknown causes.

Thus have some of the principal causes of sterility or barrenness in soils been pointed out ; but they may also depend upon others ; such as soils being too wet or too dry, &c. The remedies are obvious ; but do not properly fall in with the purport of this paper.

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It is now proposed to suggest the remedies for these imperfections or diseases in soils.

Lime, calcarious substances, and alkaline salts, seem, in general, to be perfectly competent for this purpose, properly administered.

Quick-lime is the product of calcining, or burning of lime-stone or marble; by which operation, it is deprived of its fixed air, which, in pure lime-stone or marble, is in many cases betwixt 30 or 40 grains in the hundred. The quick-lime, by this means, is much lighter than the stone was; is rendered acrimonious and caustic for some time by the burning; and when slacked with a certain quantity of water, falls down into a fine white powder; but after some time, when it has been exposed to the air and weather, or has access to other substances that have fixed air in them, it repossesses itself of that principle, and will again effervesce, and ferment with acids. This it would have done when in the state of lime-stone or marble; but acids do not ferment with quick-lime. By this it will appear, that its two conditions are perfectly different. Quick-lime, after it has been fully saturated with fixed air, is to all intents and purposes in the state of fine powdered lime-stone, and may be considered as similar in usefulness as a manure to the purest marble.

Farmers have different modes of applying lime as a manure in different parts of the kingdom. Some apply it upon the surface of old swards, and let it lie sometimes for a year or more: others put it upon fallows, and harrow it in, or plough it down; while others make composts of it, and mix it with earth, the cleanings of ditches, moss, or the like. In all these different ways where lime can be useful, it may be applied with advantage; but in some cases with more than in others, as probably may afterwards be made appear. Nothing in farming seems to require so much minute attention and discrimination, as the proper application of manures, especially lime.

The application of lime-shells, or unslacked lime, seems to be the most reasonable way of removing the first cause of sterility, or barrenness in soils, before mentioned. To apply them

them to the best advantage, it should appear proper, that they should be reduced to a half-powdered state, or half flacked. Such a contrivance as Mr Johnston has for bruising his whins for feeding his horses, would answer this purpose extremely well; as it would serve both purposes to the farmer, and the expence would be small in proportion to its utility. If it is not convenient to have this machine, the shells may be flacked to a certain degree, for the purpose of the conveniency of applying them to the soil, so as to make them go farther.

It is easy to conceive the good effects that would take place upon such an application, to a stiff, tenacious, and untractable crude soil. By the moisture in the ground, or by the first rain that would fall, the shells would swell, and burst the tenacious glebe, and render it tender and friable to a greater extent, than several ploughings and harrowings would have done; and bring it into that condition, to allow the fine bibulous roots of vegetables to extend themselves; while at the same time, it would produce all the wished-for effects of dissolving animal and vegetable oily matter, that it may meet with, into a bland mucilaginous and saponaceous compound, that would easily dissolve, and incorporate with water, and convey proper nutriment, for their growth and perfection, in stems, leaves, flowers, and seeds.

Perhaps the best time for applying lime in this manner, and with this intention, should be upon the last ploughing but one of a fallow, after it has been well harrowed. It should be put on in a dry day, and no more ground covered with it than can be ploughed in with a moderate light furrow the same day.

It should then be harrowed, and allowed to lye in that state a sufficient time to be fully flacked, that it may produce the foregoing effects, which will be in a longer or shorter period according to the moisture of the soil at the time, or state of the weather. The last ploughing should be with a furrow, somewhat deeper than the preceding, so as to raise the lime, and keep it as near the surface as possible. It may then be sown and harrowed.

Lime

Lime should never be put upon ground in a wet or lumpy state. It is feared, that the common practice is very defective in this particular. It should always be put on dry, whether it be upon the sward, or upon fallows. The equal and uniform application seems to be of much consequence. When it is put on wet, or in lumps, and ploughed in, it is apt to fall to the bottom of the furrow, and is not incorporated with the soil, so as to come in contact with it almost at every point. In this case, it touches at few, and is less capable of effecting changes.

A common box-cart, with a large strong wire-riddle in the bottom of it, instead of boards, may be so constructed, that when filled with quick-lime, and drawn over ground, it may be shaken in the same manner that corn or ashes are riddled. This would communicate powdered lime in a wished-for, uniform and equal way; and make a liming go much farther, and to better advantage, than the common one, of spreading with shovels and spades. This hint may be very much improved by persons of a mechanical turn.

Whatever way lime is applied, it should be harrowed in. If upon a fallow, the harrowing will incorporate it with the soil, by which only it can have its effects. If upon the sward, harrowing will break clods or lumps, and make its application more equal: if by accident, or from inattention in the farmer, it has been put out in that condition; while it will tear open the fog or moss, and roots of grass, and favour their dissolution, by its caustic activity, and soften the whole surface.

If farmers should adopt the foregoing ideas, relative to the use of shells, or quick-lime, and have them to draw from a considerable distance; they should do it at their convenience, and put them under cover in a dry shade, or in a heap, and cover them with turf, till a proper time for application. If they burn them in kilns upon their farms, they should not take them out until they are to use them as above.

When the second cause of sterility, or barrenness in grounds prevails, quick-lime again become calcarious, or having absorbed the principle called fixed air, which it will soon do upon

upon being exposed to the air, weather, &c. marl, and alkaline salts, are the proper antidotes.

When acidity alone is found to take place in soils, it will be neutralized by these substances, and a salt produced, that will not only be inoffensive, but which may contribute largely to fertilization, by gently stimulating the absorbents in the roots of vegetables, and sap vessels in the stems and leaves, and favouring the natural functions of plants, in perfecting their several natures.

If vegetable or mineral acids predominate in soils, accompanied with an iron principle, (which is not uncommon,) and meeting, they will form a salt of iron or copperas, which is highly astringent, and extremely hurtful to vegetation, as has been before noticed. In these cases, the application of calcarious and alkaline substances will have the best effects. There is a greater affinity, or attraction, between these substances and acids, than the iron principle; by which these acids forsake the iron principle, and combine with the others, forming the neutral salt above mentioned, by which the poison in the soil is destroyed. The alumen principle in earth, or clays in soils, is rectified by these substances also.

It is to be observed, that calcarious matters, and alkaline salts, will pretty soon have these effects upon poisonous soils, if they are very intimately incorporated with them; but if quick lime is applied it will take a longer time, as it cannot have any effect in attracting acids, and decomposing the poisons alluded to, till it becomes *effete*, or, in other words, has attracted, and is again combined with that principle, called fixed air. This may account for what farmers observe that use lime, that it produces small effects upon crops the first year.

From what has been suggested, it will appear, that if quick lime is applied carefully, and judiciously, in the way and manner proposed, to rectify the first causes of sterility or barrenness in soils, it will have that effect, especially if it is assisted with the plough and the harrow; and if any of the deleterious or poisonous ingredients are at the same time existing in them, it will, after some time, have the powerful, wished-for effect, of destroying them as soon as it becomes *effete*.

The doctrine here advanced, that soils sometimes have poisons in them, may appear fanciful and novel to some; but there seems much reason to apprehend, that these are much oftener enemies to vegetation and the healthful growth of plants, than has hitherto been supposed.

The third cause of sterility or barrenness in soils, is supposed to arise from the smaller species of vermin or insects. Such as the slug, or snail kind; or they may be of the fly kind, or of a species less visible, but equally destructive, &c.

The application of quick lime by itself, or alkaline salts by themselves, or mixed together, (which will render them more corrosive,) or foot, which abounds with a volatile alkaline salt, seem well adapted to destroy these reptiles, their rudiments or eggs, that may be in the ground. These caustic and corrosive substances are extremely unfriendly to animal life, and seem capable of destroying it even in a more perfect state than these insects can be supposed to possess. If they prevail to a great degree in soils, and if these substances have the power of destroying them, which is presumed they have, they will contribute to the manuring of the soil, as it is well known that the dissolution of all animal substances have a prompt tendency to do.

If the opinion, that the *smut* in wheat proceeds from the eggs or rudiments of a particular fly or insect, lodged in the body of the grain, is well founded, these acrimonious, and caustic substances, should seem to have the most probable good effects in destroying the living animal principle in them, and prevent their being brought into life and propagated.

It seems of much consequence, that this disease in wheat should be further investigated, to discover, by a good microscope, or otherwise, the nature of this black substance that is found in wheat, called smut, whether of an animal or vegetable nature. This, with more probability, might lead to a more certain remedy.

Various are the different kinds of steeps that have been suggested by the authors for curing the smut in wheat, while, at the same time, they have been supposed to increase the vegetative

getative power in the seed. If the idea is just, that it proceeds from a degree of animal life being contained in smutty grain, some of the very acrimonious steepings may destroy that, upon the principles foregoing, and may be useful in that way; but it is to be feared in that case, that they may be made too strong, and be hurtful to the sound seed, and injure vegetable life in it.

The steep recommended by the Italian author to the attention of the Board of Agriculture, (as lately published by the Patriotic President of the Board,) seems to be of this kind. By some of the foregoing principles, it should appear, that several of the ingredients in that steep are poisons to vegetable life; such as the alum, vitriol, and verdegrease. The only thing in the whole composition that can render these substances safe, or qualify them, are the articles of alkaline ashes and lime being added. The two last seem to be antidotes to the former, and it may not be known what effects the *tertiam quid*, or third nature, which the mixture will produce, can do, to answer the purpose. Repeated experiments can only ascertain the safety and utility of this steep.

A mixture of stale urine, quick lime, and alkaline salt, may be considered as a very efficacious steep for preventing the smut in wheat. Twenty English gallons of urine, four pounds of quick lime, and one pound of pearl or pot ashes, properly diluted with water, may be found sufficient for steeping one boll at a time, but this may be regulated by the experience and judgment of the farmer.

The wheat should not be allowed to remain in this steep longer than is merely necessary for skimming off the light and infected smutty grain, which will rise and float on the top. It should be often stirred about, and skimmed until no more arises. The wheat should then be taken out of the steep, moderately dried, and sown.

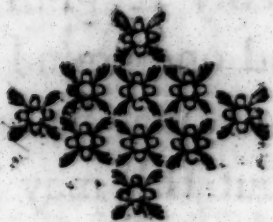
This steep appears to be abundantly acrimonious and caustic, for destroying the ova, or eggs, that may be in or about any of the grain that has not been skimmed off, but not so strong as to injure its vegetative powers.

The common steep employed by farmers, by making a
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strong pickle of common salt and water, may answer very well for floating weak and smutty grain, by which it may be skimmed off as above ; but as it is often found not to prevent the smut in wheat, it seems necessary that some more active agent should be tried.

These hints and suggestions are submitted to the candid and unprejudiced, with diffidence ; but at the same time with modest confidence. And if there is one word, one sentence, or one idea, thrown out in them, that can enlighten, or lead others to improvement, in the wide field of agricultural science, which may only at present be considered in its infancy, it will give sensible pleasure and much satisfaction to the author.

T. G.



APPENDIX.—No. 6.

The following singular Examples of ingenious Economy in the Practice of Mr JOHNSTON of Hill-house, near Kirknewton, are deserving of notice.



HIS cows (of which he has from fifteen to twenty in milch,) are in summer fed with green clover, in the house, during the day, but are turned out through the night, to graze in an adjacent inclosure. By this mode of feeding them, a lesser quantity of ground suffices for their support, and a much greater proportion of manure is obtained, while the cattle themselves are kept in better condition than in the usual practice of others, who pasture them constantly in the field. In winter, they are fed on turnip, straw, and boiled chaff, alternately; and, from the successful result of an experiment, he means to give them also a proportion, daily, of boiled linseed, which he finds to have a capital effect, and is obtained on moderate terms; for a peck of Scotch feed, which may cost about one shilling and eightpence, is sufficient to convert forty-five Scotch pints of water (by boiling it down to forty,) almost into a jelly, strong and nourishing, and which the cows eat with great keenness.

From May to November, almost the whole milk is made into cheese, in the following manner: the curd, being well wrought and compressed by the hand, is suspended in linen bags from the roof of the milk-house, in quantities from twelve to eighteen pounds, where it remains eight or ten hours

hours to drip; after which it is taken down, unpacked, broken small, and salted; it is then replaced into the bag, and suspended as before, where it remains eight or ten hours longer, when, by this time adhering more closely together, it is turned over into a bag of net-work, and suspended anew in the drying-house, where it remains four or five months, till it is completely dry for the market, requiring no more attention during the process, but only, for the first three or four weeks, that it be turned in the bag in the course of every third or fourth day, according to the state of the weather. This kind of cheese is reckoned to be of such a good quality, as to sell very readily at sixpence the pound weight (sixteen ounces,) in wholesale. It seldom requires more than three Scotch pints of milk to produce one pound and a half of compressed curd, or a pound of marketable cheese; in autumn, in particular, a greater proportion is obtained, besides being better in quality, the milk in that season being well known to be richer than at any other time.

The whey is wholly consumed by hogs, who, at an average, take about sixteen Scotch pints a day, each, and in this way produces at the rate of half a farthing the pint; as the hogs, which are fed on nothing else, by the time they are twelve or fourteen months old, (the usual time of killing,) are, at a medium, twelve or fourteen stone (sixteen pounds) weight, and of course give about twopence each day for their feed. Mr JOHNSTON makes the most of his pork, by curing it himself into bacon, smoked in a particular manner with wet litter, which gives it an uncommon fine flavour, and of course it brings a high price.

The profit of a dairy under this management, may perhaps be better conceived, from the general result of a season. At the time I was with him, in the middle of October, he had in his drying-house rather more than six hundred cheeses, from six to twelve pounds each, worth about 130*l.* sterling, the produce of a single season, not then concluded, from nineteen acres and an half of ground, viz. five and a half Scotch acres of clover, and fourteen acres of pasture; besides what was used in his family in milk and butter, to this add the value

lue of the whey-fed pigs, which, taken together, could not be well estimated at less than from 15 to 20 l. more. There were 21 cows altogether fed on this ground; the average quantity of milk a day, which those in milk gave, was seven Scotch pints and a quarter each, *at the height of the grass*; and he estimates their value, one with another, at about 8 l. sterling each. They are of no particular breed, but occasionally bought in the neighbouring country, in which it is known that the race is a mixture of many different kinds.

In the winter months, as it would then be more difficult to dry new-made cheese, he gives up that business altogether, and applies the whole produce of the dairy to the making of butter, which, besides being more judicious, from the above reason, is also more economical, because that is the very time in which butter sells at the highest price. The milk is churned entire, without being separated from the cream, in long upright churns, four at a time, containing from forty to sixty Scotch pints each; the machinery turned by a horse, in which, it is to be remarked, that, not only is the operation performed in the fourth part of the usual time, (in about an hour altogether,) but that a greater proportion of butter is obtained. The milk is allowed to stand, after milking, in wooden vessels, till it thickens, and acquires a small degree of acidity, before it is churned, which, in summer, takes place naturally in from thirty-six to forty-eight hours; and in winter, by means of a stove in the milk-house, in much the same time. From eight to ten Scotch pints of milk produce one pound (twenty-two ounces) of butter*. The butter-milk sells at one penny the pint.

Observing

* Having seen the result of the dairy, as applied to the making of butter as well as of cheese, it may be worth while to draw the comparison between them. Thus:

IN CHEESE MAKING,		L.	s.	d.
35 Scotch pints of milk produce 11 2-3ds lbs. of cheese,				
worth	- - - - -	0	5	10
And about 32 pints of whey for the pigs, worth	-	0	0	4
In all,	- -	L. 0	6	2

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Observing that horses were fond of the shoots of green whins (furze,) he erected a machine to bruise them, (similar to that used for bruising tan bark,) and for some winters past he has fed his horses on whins every day. An acre, in the natural state, is found to serve six horses four months, and, as they require two years to reproduce, two acres will be sufficient to keep them in constant supply for that time. The expence of cutting for six horses is about one shilling and eightpence weekly; and as they are bruised with one horse in the machine, in about twenty minutes daily, the expence, on the whole, must be very little indeed. As to their effect, he finds, that with one feed of corn and whins, the horses are kept in as good order, as with two feeds and straw; so that the whole straw, and one feed, are thus saved altogether.—Valuing, therefore, the feed of corn and the straw saved, at sevenpence a day on each horse, hence 17l. 17s. on six horses

IN BUTTER MAKING,

35 pints produce $3\frac{1}{2}$ lbs. butter at 1s. per lb.	-	-	0	3	6
35 pints of butter-milk at 1d. per pint, hence	-	-	0	2	11
In all,	-	-	L. 0	6	5

The amount is thus not greatly different the one from the other; neither will the expence, in Mr JOHNSTON'S method, (which is, in fact, but trifling any way,) make much alteration in the circumstances, excepting only, that from his situation, at ten miles distant from the market town, it will be much less expensive to dispose of the product of his dairy in cheese and in bacon, than in butter and butter-milk, so as to bring the comparative account between the two different processes, perhaps to the same point.

There is a circumstance, however, in cheese making, which seems to have escaped his attention, which is, the practicability of making butter from the whey of cheese. This is indeed little known in this county, but the following is the result of that practice, which, from repeated experiments, I am enabled to state as a fact, viz. that from 27 Scotch pints of whey, one pound (16 ounces) of butter may be obtained. Now, if 35 pints of milk produce, as before, 11 2-3ds pounds of cheese, worth

-	-	-	L. 0	5	10
to this, add 16 ounces of whey butter, at 9d. per lb. hence	-	-	0	0	10 $\frac{1}{2}$

In all, L. 0 6 8 $\frac{1}{2}$

which is 3 $\frac{1}{2}$ d. more than can be made from the same quantity of milk made into butter and butter-milk; a proportion equal to about five per cent. and on an extensive dairy must be a considerable object.

ses for seventeen weeks. From this deduct the expence of cutting, bruizing, &c. which may be stated at five shillings weekly, there will remain 13l. 12s. as the produce of two acres of whins—6l. 16s. per acre yearly.

He has a very powerful threshing machine, which, with four horses in the draught, and fourteen people to attend, threshes and cleans (with separate fanners,) nine bolls of oats an hour. The diameter of the horse-tract of this mill is twenty-eight feet, the cylinder four and a half. The movements are two, and the velocity is in proportion as fifteen to one, of the horses in the draught. Nothing can exceed the cleanness of the threshed straw. Mr JOHNSTON is decidedly of opinion, that there is one boll more got in twelve, than by common flails.

The most singular circumstance, perhaps, in his whole practice, is that which relates to the disposal of his crop in harvest. He threshes the whole of it off, nearly as fast as it is cut down, allowing it only, in dry weather, three or four days to stand in the stook. The straw, after it is threshed, is built up in *fows*, like to hay, in the barn-yard, and is found to be more nutritive, and more to the taste of the cattle, than if it had been allowed to have been completely dried before it was *led in*. To render this practice more conformable to the climate, he has a shed adjoining to the barn, that will hold one hundred bolls of corn in the straw, and another equally large, for holding the straw after it is threshed; so that even in the case of rain, by taking care to have the cornshed previously filled, he is enabled to carry on the threshing operations for a considerable time without interruption; and from the short time allowed the corns to remain cut in the field, his harvest is at least ten days in progression more forward, and the like time sooner finished, than it would otherwise be. But the most important consideration of the whole is, that the quantity of corn obtained by this early threshing is much more abundant, as may be clearly seen from the following experiment:—In a field containing one hundred and twenty stooks of oats, every third stook regularly was brought home in autumn, and threshed, forty stooks in all; which pro-

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duced

duced eight bolls six pecks of good grain, and two pecks of weak. The eighty stooks remaining, which, at the same rate, would have produced sixteen bolls three firlots of good grain, and one firlot of weak, were stacked in the yard, and threshed in April following, when the produce was only ten bolls three firlots of good grain, and six pecks of weak; being a loss of about six in seventeen, or nearly thirty-five per cent. in favour of early threshing! There was none of this corn destroyed by vermin, and the weight in autumn was within two pounds the boll of what it weighed in April.

The last particular to be noticed (what in husbandry may perhaps be reckoned the *primum mobile* of the whole business) is the dunghill. This is placed in such a manner, in a shaded situation, that the whole waters of the premises converge into it; therefore, as not a particle of vegetable stimulus escapes, he is enabled to augment its contents, with earth laid in the bottom of it, occasionally, as it is emptied, from road sides, ditch sides, &c.; so that he has always a liberal quantity of such manure, to distribute from time to time over his lands, whether in tillage, in pasture, or in hay, inasmuch, that his fields, after a bountiful production, are enabled, and stimulated in an augmenting ratio, to make lucrative returns for a series of years to come.

[The above is re-printed from the Abridged Report of Mid-Lothian, formerly published; but since that time, Mr JOHNSTON has found reason to alter some part of his practice, and has also given some valuable information in addition, as may be seen from the following communication, which he has obligingly permitted to be added to this account.]

Account of the neat Expence of Mowing, Gathering, Binding, Stacking, Leading-in, Threshing, Dighing, Redding, Housing, and Stacking of Straw; as also, the Expence at delivery of the Grain, &c. of 37 Scotch Acres:

	£.	s.	d.
Money paid for wages, - - - - -	25	0	0
Ditto for bread, - - - - -	3	7	3
Carry forward	L. 28	7	3
		Ditto	

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	£.	s.	d.
Brought forward	28	7	3
Money paid for beer, - - - - -	2	0	0
Ditto, on account of breakfast, - - - - -	3	7	3
Expences attending delivering the Grain, Tolls and Maggs included, - - - - -	1	7	1
54 lb. of butter allowed the shearers to dinner, at 9 d. per lb. - - - - -	2	0	6
	<u>L. 37</u>	<u>2</u>	<u>1</u>

" SIR,

" I have sent you an account of the whole expence of the above, which, if you think worth inserting in your Report, you are extremely welcome. With regard to the Dairy business, the only difference I have made is, that in place of hanging the curd up immediately in bags, I now cause it to be put in a large *cheshwall*, and put in the cheese-press, and after remaining there for six or eight hours, it is taken out and broke down very small, and then put in a cheshwall again, which gives the cheese something of the form that the net gives it; and after being press'd in it, it is suspended in the net, where it remains till such time as it goes to market. With regard to the whey butter, I find it takes about fifty Scotch pints of whey to the pound of twenty-two ounces; for, upon an average, I found that my cows produced about one pound in the week each; this butter, after being salted, with the addition of a little sugar and salt-petre, is as good as any person would almost desire. *There is one thing worth noticing, which is, that the hogs thrive as well upon the whey after the butter is taken from it, as before.* The process of the whey butter is exactly as you stated to me *. I dare say you

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will

* The process is this:—The whey is put into a boiler over a fire, where it is heated, so far as to approach the length of boiling, but no further; care being taken to throw in cool whey, or water, from time to time among it, as it begins to boil. A thick scum is all this while collecting on the surface of the

will think the harvest account very high, but there is one thing you must attend to, that upon the 37 acres, I had 324 bolls of marketable grain besides the weak.

I am,

SIR,

Yours sincerely,

Hillhouse, 2 Dec. 1795.

GEORGE JOHNSTON.

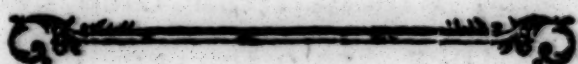
MR ROBERTSON, Granton.

the whey in the boiler, which should be carefully skimmed off as it rises, till the whole is extracted, which is done in less than an hour. This scum, which has the consistency of thick cream, but rather more pale in the colour, may be kept in wooden vessels for a day or two, and managed in every respect as cream itself, being churned after keeping the same time, the butter forming in the like manner. It was only twice, indeed, that I attempted to make butter from whey, merely as experiments to determine the fact; the result of both, though differently conducted, was uniform. In the one, the whey had stood 24 hours after being taken from the curd, before it was put to the fire; in the other, it was put on recently warm from the curd. In both, the quality of the butter was alike, as was also the quantity, viz. 22 oz. of butter from 27 Scotch pints of whey.

G. R.

APPENDIX.—No. 7.

Observations on the Parish of RATHO.



EXCEPTING some small spots adjacent to the villages, the parish of Ratho, within these thirty years, consisted chiefly of waste lands. The small portion of it that came under the plough being parcelled out among petty tenants, possessed of little stock, and so strongly attached to the customs of their ancestors, as rendered it a matter of no small difficulty, to introduce among them any regular system of modern husbandry. Farms, however, began, about that time, to be let upon a more extensive scale, old prejudices gradually gave way to the evident success of a better system, and men of ability and enterprize were induced to undertake, what perhaps might have never been effected by the former tenants.

Since that period the improvements have been rapid and progressive. The appearance of the country has undergone a wonderful change. Instead of a continued prospect of whins and swamps, thinly interspersed with pieces of ley, exhausted with successive crops of oats, and again consigned to their natural productions, fertile fields appear regularly inclosed, sheltered, and ornamented with belts, and clumps of planting, yielding crops little inferior to the more highly manured lands around the metropolis.

The great quantity of lime applied to those lands, of which plenty is to be had in the immediate neighbourhood, has contributed in no small degree to their present fertility.

The

The turnip system has also found its way into this parish, and has been practised lately on the light lands in the western parts with great success; and it is to be hoped that it will still farther prevail, that the lands thereby may be proportionally fertilized, for it is scarcely to be expected that the carting of manure from Edinburgh, (which has done so much nearer the town,) will here become general, its distance making it by no means a lucrative concern.

The interior and eastern parts of the parish being of a stronger and deeper soil, are more adapted to the cultivation of wheat and beans, which, from their greater vicinity to Edinburgh manure, they are often enabled to bear in succession.

There is also a great proportion of the lands formerly waste, now in rich and valuable pasture, which is sometimes sown out after summer-fallow, and green crops, and pastured the first year with sheep, a practice excellently adapted to improve the soil.

Some few of the less modern farmers, however, still retain the practice of taking two, and even three, repeated hay crops; a mode highly pernicious to the lands; whereas, on the contrary, it is well known, that, taking one crop of clover only, has a great tendency to enrich and pulverise the soil, and ensure a succeeding good crop of oats.

According to the most accurate account I have been able to collect, the quantity of all kinds of grain brought to market thirty years ago, did not exceed 1200 bolls; whereas, from the following table of the actual state of the cultivation of the parish in the year 1795, the number of bolls for the market cannot be less than 5000.

Produce

APPENDIX

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Produce of the Parish of Ratho Crop, 1795.

Produce of the Parish of Ratho Crop, 1795.									
	Number of acres.		Average re- turn per acre.		Number of Bolls produ- ced.		Average of Fiars from 1787 to 1793 inclusive.		Total value.
	A.	R. F.	B.	F. P.	B.	F. P.	L. s. d.		
Wheat,	230	3 0	7	2 0	1730	2 2 1	2 6	L. 1946	s. 19 d. 0 ³ / ₄
Oats,	823	3 0	6	0 0	4942	2 0 0	14 6	3583	6 3 6
Barley,	296	2 0	6	0 0	1779	0 0 0	17 6	1556	12 6 6
Beans and pease,	185	2 0	5	2 0	1020	1 0 0	14 6	739	13 7 ¹ / ₂
Turnips,	55	0 0	0	0 0	0	0 0 6	0 0 per acre.	330	0 0 0
Potatoes,	49	0 0	25	0 0	1225	0 0 0	7 0 per boll.	428	15 0 0
Hay,	193	2 0	150 stones.	0 0	29025	0 0 0	0 6 per stone.	725	12 6 6
Fallow,	192	0 0							
	2026	0 0						L. 9310	18 11 ¹ / ₄

Which is, (including fallow,) at the rate of 4 l. 12 s. per acre.

N. B. There is also, not accounted for, a very considerable proportion of pasture lands, of which the produce may, at an average, be 15 s. yearly, but the extent could not be ac- curately ascertained.

A particular kind of stone fence, used in the parish, is per- haps not unworthy of notice. It is built neatly of dry stone, to the height of three feet, and in breadth about two; upon this is laid a coping of thin flat stones, projecting irregularly, and so placed as at stated distances, to admit of a stone being driven *home*, resembling the key-stone of an arch; thereby adding strength and permanency to the formidable qualities of

of the Galloway dyke, of which this is an improvement on the original plan:

A mode has lately been adopted, in regard to the reparations of the cross-roads in the parish, (which, from their extent and insufficiency, the statute service-money was totally inadequate to keep in order,) that is, perhaps, not undeserving of a place here, and worthy of being imitated by other parishes in similar situations.

The principal part of the expence of repairing roads consists in the carriages. The tenants, when gathering the stones from their grass lands, in place of laying them in the furrows, or putting them in some waste corner as formerly, cart now, (what are not wanted for draining) to the roads, gratis, making choice of such part of the roads as may be most advantageous to themselves, and the statute money is thus entirely applied to the breaking of them; by which means, repairs were made last year to the worth of L. 100, in place of L. 50. (the amount of the legal assessment levied in the parish.) Hence the roads are already much improved, and in place of being impassable as before, will soon be in a most respectable state.

GEORGE REID,

Ratho, 10th Dec. 1795.



APPENDIX.—No. 8.

Hints on the Improvement of MOOR FARMS;

BY THE

Author of LOOSE HINTS, &c. on MANURES.—(Appendix No. 5.)

THE idea that these farms cannot be improved seems not well founded; almost all of them having the means of improvement within themselves. There are few of them but what have a portion of low land connected with them, that lie between the moors, and the rivers or burns, with which they are generally bounded, upon the one side or the other. Some, more or less, in proportion to their extent.

There are a great many large farms of this kind, that are formed from an union of two or three; and in such cases there is very commonly a large portion of arable and improvable land in one possession.

These, at present, are extremely subservient to the purposes of the farmer, in producing subsistence for his family, in corn for oatmeal, potatoes, &c. as well as low-land pasture for his cattle and sheep.

The greater part of these farms are remote from the common means of improvement by dung, except what is made upon the farm; but many of them have lime upon them, or at no great distance; and although it may happen that they are far from coal to burn this lime, yet it is most probable, that they are extremely near plenty of other fuel for the purpose; as almost in every farm of this kind there is a command of abundance of turf, or peat moss, that is capable, as well as coals, of burning lime; the ashes produced by

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which,

which, is adding a portion of a very active and profitable manure, when well mixed and incorporated with the soil.

When the farmer is without the ability of procuring dung, or lime, marl, or sea-shells, from his remote situation to any of these useful manures, he has a manure within his own grounds, which perhaps he has never thought of, and which is capable of improving them in as perfect a manner, almost, as any of the former, and that, in general, very near at hand to his improveable lands; I mean the turf-bog, or peat-moss, which very few moor farms are without, in the greatest abundance.

That substance called *peat*, or *moss*, is of a vegetable nature, and when burnt and reduced to ashes, and spread upon land in an equal manner, are an excellent manure, either for pasture, or corn lands, especially when applied as a *top* dressing.

Some farmers, in some parts of the country, have been in the practice of burning a part of the soil, in coarse, benty, or heathy land, and then ploughing it down for crops. This will produce luxuriant crops of corn, for a year or two, but it leaves the soil barren afterwards for many years, the act of paring and burning having destroyed a great deal of its best parts. The applying the ashes of peats, or turf, brought from useless bogs, or mosses, at some distance, and spread upon the ground, will not be much more extensive, than the paring and burning as above, and it will save the destruction of soils that are to be improved, and will meliorate and fertilize them. Altho' paring and burning may be very injurious to light lands, yet in such as have a deep covering of turfy or mossy surface, may admit of these operations without injury, and be very much improved by them, if not over-cropped afterwards.

This operation of converting moss into ashes, can neither be difficult nor expensive. The best time for doing this, may be in the month of May, or June, when the weather is dry and tolerably good; and as the shepherds, about this period, have not much to do, they may give great assistance to the other servants and labourers, that may belong to the family, in digging up, by breast-spades or otherwise, large square or oblong junks of moss for this purpose, that may be gently
dried

dried upon the ground by turning them daily, for a few days; or they may be put up in rows one above another, in the form of a common folding-dyke, where they would dry sufficiently for burning. This being done, they should be made into a large kiln, with wind passages, or flues in it; and then, after having some dried heather, or fern, put into the passages, the whole is to be kindled and set on fire. It seems almost unnecessary to mention, that the driest sods of turf should be at the lower part of the kiln. The whole mass being set on fire, will burn in a slow half-smothered manner; and as the burning extends to the top, or sides, more moss or turf should be added, from time to time, till a quantity of ashes is obtained sufficient for the purpose required. The sods of turf that have been added, after the moss has been fully kindled, need not be dried, as the heat from below will soon dry them sufficiently.

It is not meant, that turf, or moss, managed in this way, should be burnt and reduced to white, or even very brown ashes; I wish that they may be only burnt to a blackish gray colour.

In this way, any quantity of ashes may be got, and when the burning ceases, they may be covered with broad-cut turf, or divots, to keep them dry till they can be conveniently carried where they are to be put on. They should then be laid upon the surface of the sward, or fallow, in cart loads, at proper distances, and spread, as equally as possible, with spades or shovels, or by a cart with a strong wire-riddle in the bottom of it, in the same manner as is suggested in the paper No. 5. in the Appendix, for applying powdered quick-lime. As the greater part of these ashes that are fertilizing are soluble in water, the first rain that falls will dissolve the alkaline salt in them, and wash it into the soil, so as to produce a luxuriant crop of corn, or grass. If the ashes can be preserved dry during the winter, they should be put upon the ground, immediately before the crop is sown. If not, they may be applied soon after they have been prepared, when they will mingle with the soil and dissolve the oleagenous parts of it, and have all the effects proposed in the paper No. 5. of the Appendix. If the

ashes are put upon old coarse grass lands, the nature of it will be improved. If upon lands intended for corn, not above two crops should be taken. If upon fallow, well prepared with the plough and harrow, with as much dung from the farm as can be spared, a crop of turnips, and then corn and grass seeds.

When the soil is strong and capable of bearing repeated cropping, which many of these lands are able to do, the crops may be changed annually, from white to green alternately. The green should be turnips, potatoes, or red clover, with rye-grass. The two first may be employed most advantageously for feeding cattle or sheep, in the winter or spring, when pasture or fodder are scarce, or wanting. The latter will serve for an early bite to ewes and lambs in the spring; or if not wanting in early seasons, it will serve for cut-grass, for feeding milch-cows or horses in the house, or for hay, if allowed to ripen.

In all sheep-farms of any great extent, there should be a tup-park, subdivided into two or three parts, and inclosed with a stone-wall or dyke, of sufficient height to keep in sheep; in which the tups should be put, and kept some considerable time, before they are allowed to have intercourse with the ewes. The size of this inclosure should be in proportion to the sheep stock. This park may be useful for other purposes, and should not be less than 15 or 20 acres, or more, if the stock is great. It should be upon dry land, and as much of it arable as conveniently can be had, which should be cultivated as above, and when laid down in heart, it should be sown with white and yellow clover seeds; a very considerable portion of parsley seed; some wild thyme and lavender seeds. All of these seeds will grow upon pretty elevated situations, and, except the parsley, are commonly to be found in sheep pastures growing naturally. Something more is expected from this inclosure.

If it is made upon plain ground, or upon that which has little shelter upon it, the dyke will afford some, but that is not enough. While it is under cultivation, it is recommended that drills of whin seed should be sown in different parts
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of it, running cross on one another, or in small clumps, so as that they may get to a sufficient height, and strength, before it is pastured; that when that takes place, the whins may both answer for shelter, and administer subsistence for sheep in hard seasons, when the ground is deeply covered with snow. Sheep will eat whins, and are fond of them. If broom and juniper will thrive in these parks, they should be added to the plantation for the same purposes; and there is good reason to believe, that they will not only give food, but in some cases be medicinal, in some diseases of sheep. This park so laid out and cultivated, may not improperly be called an Infirmary, or Hospital park. It will not only answer the purpose of keeping the rams a sufficient time at the proper season, and putting them in vigorous good order, but at other times it may be a very fit place for putting ailing diseased sheep into it, that may be low in health and strength. Sheep tending to the rot, or what is called *pocked*, may be recovered in this healthful pasture, that is proposed for them above. There is much reason to believe that this disorder is of a dropfical nature. The swelling under the chin seems to be watery, and such of them as die, are found to have bad livers with watery bladders upon them and other parts of their bowels. The salutary ingredients in the pasture of this park, laid down as has been proposed, are very likely to prevent, or cure this disease, if cureable. The warm aromatic plants will prove cordial to them; while the parsley, broom whins, and juniper, will prove diuretic and cleansing. I believe that *pocked* sheep have seldom been found upon pastures abounding with whins, broom, or juniper. Parsley seems well adapted to sheep pastures. They are fond of it, and it is not shy in growing, remains long in the ground without degenerating much, and the seed not expensive at first.

Tup parks are not so universal as they ought to be. Few farmers can afford the expence of making them, especially if their leases are short or near run out. The proprietors of store farms of this kind should lay out the money in making them, obliging the tenant to pay 5 *per cent.* for the money, and to keep up the fences in proper repair. As it would be
a last

a lasting improvement to the landlord, and a great temporary accommodation to the tenant, they should go hand in hand in this useful improvement.

In the greater number of sheep farms, plenty of stones may be obtained from quarries, or otherwise, for making this inclosure; but in cases where stones are not to be got, a *sod* fence may be so constructed as to keep in sheep. In that case, the foundation should be three or four feet thick, and taper gradually to the top, which may be about a foot and a half, or two feet in breadth, and the height from four to five feet, which may be considered of a sufficient height; but as the small black-faced sheep are very active, and not easily confined, it will be necessary to have a row of projecting long stones put upon the top of it, or a low coping or paling of wood of any kind. When neither of those are to be got, a drill of whin seed may be sown on the top of the fence, and, to secure the growth of the whins, a little manure of any kind may be added, if the soil appears barren. When the whins thrive and grow up, they form a most complete fence, that even a deer cannot get over, and it affords a most comfortable shelter for all animals that may be in the inclosure. As the propagation of whins, broom, and juniper, in sheep farms, appears to me to be of great consequence for the purposes before mentioned; and if the farmer cannot raise them in a tup park in the way that has been proposed, from the unwillingness of the landlord to contribute his mite, his own inability, or the smallness of his farm, or any other cause, I beg leave to suggest the following:—Upon the lowest and driest of his ground, let him, in different places, run three furrows with the plough, and cross them with three others, at different parts, according as the situation of his ground will allow. It is meant that these furrows so disposed should be fallowed so as that the soil should be fully pulverized.

In the months of February March or April, the seeds of whins, or broom, may be sown, having interruptions here and there for the accommodation of the sheep to pass to and fro, either for feeding or shelter, according as the wind may blow. To
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have whins at an earlier period than by raising them from the seed, young plants may be got in many places, and planted by the dibble, or spade, like thorns. To secure young plants of this kind raised either way, it will be necessary to inclose them with a common single-folding fence, four or five feet in height, which will stand two or three years, till the plants have got sufficient strength and maturity, otherwise they would be eat up at too early a period and destroyed. Small clumps of these plants may also be made up and down at no great distance from one another, on the sides of hills and low grounds for the same purposes, and may be secured by the same means, from being eat up, a due length of time. Small clumps of the Scotch fir may be very proper for stells, as well as for food in the winter.

Except where sheep farms are connected with much low lying ground upon the banks of great rivers, much cropping seems not advisable, as the crops are generally late and seldom ripen fully. In high farms, it seems advisable that farmers should throw their arable lands into pasture as soon as possible by the aid of the manures suggested, and sow the grasses recommended, reserving a proper proportion of their best and driest land for turnips and potatoes, especially the *red-yam* potatoe, making use of the peat or moss ashes, together with what dung they can make, to aid the cultivation of these two most beneficial productions.

The *red-yam* potato is much more productive than any other kind. They are very large, and will grow almost upon any kind of soil, and as I am well informed, with little or no manure. They are remarkable for enriching and meliorating the land, and fit it for the production of any kind of crop, where the climate is favourable. This root is not commonly made use of for the food of man, though not unwholesome, but is most excellent for feeding horses, and milch-cows; keeping the first in good fleshy order for labour, with very little corn, and extremely favourable for producing milk in the latter. As it is little known in many parts of the country, I most earnestly recommend it to the acquaintance of all farmers, but especially to those for whom this paper is more parti-

particularly intended. It is given raw to both horses and cows. I don't know if sheep will eat them. It is worthy of trial, and if they do, it will still be a more valuable acquisition to the moor farmers, as well as the lowland ones, to whom the use of it is only known to a few as yet.

Every store farmer should endeavour to have a field of turnips every year in extent to the wants of his farm, and the means he can procure of obtaining manure, for they will not do well without some. Every thing should be done that the plough and harrow can do, to make the mould fine, and after he has applied what dung he can get, he should sow his seed at the proper season; and if he thinks he has been deficient in the necessary quantity of dung, he may give it a top-dressing of ashes. This most invaluable crop will seldom fail in moor farms, if the ground be properly prepared, as these situations are most likely to have refreshing showers soon after the sowing, and the young turnip leaves will be in no danger from the slug or snail, which in low lands are often found to be extremely destructive. The alkaline salt, in the moss ashes, when they are made use of, will very probably destroy them, if they be in the soil. Great advantages must accrue to the farmer, if he can command 10 or 15 acres of turnips each year. It will enable him to bring his crok-ewes and other sheep that he means for the butcher, in much better order than otherwise, and put 3s. or 4s. in his pocket more than he would have got without such feed; and if he feeds black cattle, as many pounds each.

As I am an enthusiast in the interest of that useful animal a sheep, that feeds and cloathes us, I beg leave to suggest a few more hints for its comfort and accommodation in the winter, when severe. I would recommend hay-heather to be made in summer, to be cut when the heather is in its greatest bloom. Very little winning will answer, and it may be put in stacks or ricks, upon convenient parts of the farm. Sheep, I am well informed, will eat this in deep storms of snow, and such ricks or stacks, in that case, will both answer for food and shelter, by way of *stells*. These heather stacks, or ricks, may be covered with *divots* to keep them dry.

Another

Another suggestion is, that the farmer should erect large shades upon different convenient parts of his grounds, facing different ways, that his sheep may have shelter from the storm, whatever point it comes from. Shades of this kind, properly constructed, will answer much better than any stells that I have ever seen. Sheep at first are shy of coming near, or going into places of this kind; but if they are placed at some distance from the habitations of man, they will soon be familiar to them, for shelter either by night or by day, if the storm is great, and little or nothing to be got without. If coarse grass hay, or even properly prepared heather hay, were put under cover in part of these shades, they would soon find their habitations agreeable and comfortable every way. It seems unnecessary to be particular about the construction of these shades. Every common understanding will readily suggest a proper enough method. Let it suffice, that the walls should be made of fods, like to what some of the commonest country cabins are similar. It would be a good place for erecting one or more of these shades upon the wall or dyke of the tup-park, where the sheep would be near whin or broom pasture.

In many farms of this kind there is a very considerable portion of wet marshy ground, approaching, in the produce, to coarse meadow, abounding with *sprits*, or flags and rushes, and a good deal of long eatable grass intermixed. As they are rough, they are extremely useful in snow storms for the sheep to *work* in; and some parts of them are, at times, cut for coarse hay for sheep or cattle, in their natural state; but if these grounds were properly drained, they might be made much more productive in the quantity and quality of the grass or hay that they would raise, especially if, after they were made dry, they were dressed upon the surface with ashes.

If Mr Elkington's method of draining was once well known in this country, it may be applied to good purpose in these situations, as much of these grounds are hanging.

On moor farms there are also very often to be found large portions of pretty dry heathery and benty ground, that lies

pretty low and flat, and at the same time not very wet, that seems very capable of much improvement, and may be made arable at no very great expence. This ground is of a mossy nature to appearance, but is different from real moss, or what has lately been called by a very ingenious and learned gentleman (Dr Anderson,) *quick-moss*. It is composed of a black earth, formed from the roots of bent and other grasses, the roots of heather, &c. and often a small portion of quick-moss, which the above very ingenious gentleman in his learned *Practical Treatise on Peat-Moss*, calls *Dead-moss*. I beg leave to recommend the perusal of this *Treatise* to every gentleman and farmer that have moss upon their grounds, from which they may draw many useful hints.

The plough and the harrow will do much for this kind of soil; but if lime, marl, or sea-shell sand, could be got, it would produce great crops. If these are not to be obtained, a large dose of ashes must be put on. As this ground is often deep in the soil, and can spare a diminution, it may admit of paring and burning without suffering, if not more than two crops are taken out of it. The proper grain for this sort of land, and indeed for all late moor farms, is the *red* early oats.

This oat is commonly a fortnight earlier than the most of oats sown in this country, and is not subject to shake, and is fully as productive in grain and meal as any other oat.—This is not generally known in many parts of this country.

Thus have been thrown out a good many hints and observations upon the improvement and meliorating the condition of moor farms, a subject that has hitherto been little attended to. Many more may have occurred to the author, and others; but at present, time does not admit of re-considering and extending the subject in a more particular way.

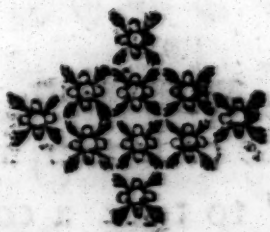
The author was born upon a moor farm, and presumes he knows something about them, and is warmly interested in the good of his country in general, and of these districts in particular.

T. G.

EDINBURGH, 22d Dec. 1795.

P. S. Since

P. S. Since writing the foregoing pages, the author has learned, that the present chief Baron, Mr Montgomery, has very successfully improved considerable portions of the barren land upon his estates, by the application of peat or moss ashes, somewhat after the manner suggested above. He trusts that this will speak more forcibly than any thing he has said, coming from such a discriminating and respectable an authority.



APPENDIX.—No. 9.

*On the Price of LABOUR, and the Price of MEAL
and GRAIN.*

BY THE

*Author of OBSERVATIONS on the HUSBANDRY of MID-
LOTHIAN.—(Appendix No 1.)*

AS many entertain an opinion, that the price of meal regulates the price of labour, it may not be improper, in a work of this kind, to take a comparative view of the progress in the rise of both for a century back. For this purpose, I shall divide the whole into periods of ten years, taking the average of the fiars of meal during each period; and to that add a halfpenny per peck, which will bring it nearly to about the retail price.

Different

APPENDIX.

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Different Periods.	The aver- age price of meal per peck,	The price labour was at per day.	Ploughman's wages per annum.	The highest and lowest wages of women - shearers in the several pe- riods.	Rate of thrash- ing per boll.
From 1695 to 1705,	8 $\frac{3}{4}$ d.	6d. and 6 $\frac{4}{8}$ d.			
From 1705 to 1715,	8 d.	6d. and 6 $\frac{4}{8}$ d.			
From 1715 to 1725,	8 d.	6d. and 6 $\frac{4}{8}$ d.	2l. and 2l. 10s.		
From 1725 to 1735,	8 d.	6d. and 6 $\frac{4}{8}$ d.	2l. and 2l. 10s.	2d. to 4d.	4d.
From 1735 to 1745,	8 $\frac{5}{8}$ d.	6 $\frac{4}{8}$ d. and 7d.	2l. 10s. and 2l. 17s.	2d. to 4d.	4 $\frac{1}{2}$ d.
From 1745 to 1755,	8 $\frac{7}{8}$ d.	7d. and 8d.	2l. 17s. and 3l.	3d. to 7d.	5d. and 6d.
From 1755 to 1765,	9 $\frac{1}{2}$ d.	8d. and 9d.	3l. and 3l. 10s.	3 $\frac{1}{2}$ d. to 7d.	6d.
From 1765 to 1775,	11 $\frac{10}{12}$ d.	9d. and 10d.	4l. and 4l. 10s.	5d. to 8d.	6d.
From 1775 to 1785,	10 $\frac{7}{8}$ d.	10d. and 12d.	4l. 10s. and 5l.	5d. to 10d.	6d.
From 1785 to 1795,	11 $\frac{7}{8}$ d.	14d. 16d. and 18d.	5l. and 7l.	6d. to 12d.	6d.

From the above, it appears that the price of meal does by no means regulate the price of labour; the price of labour for

for the last ten years, by this statement, exceeds what the price of labour had been during the first ten more than double, yet the price of meal is only increased one third. It also appears, that the price of labour, till within these 50 years, was always about a fourth part short of the average price of meal; and that it is but for about 20 years past, that a labourer's day's wages has been equal to the medium price of a peck of meal. There are many other particulars, that show clearly, that the increase in the price of meal has not been the cause of the increase in the price of labour, nor has it ever had the smallest tendency to that effect. It was not till after 1741 that the wages of a day-labourer rose above half a merk Scotch, which was sixpence and four-twelfths of a penny Sterling. About the period 1750 it was established at seven-pence per day, the nine years preceding that, the average price of meal was only eight-pence halfpenny per peck, whereas the average price of meal for the 9 years prior to the year 1742 was eight-pence eight-twelfths, yet the wages never altered; and the price of labour from 1750 till after 1757 increased very little, there being only a few particular hands that got eight-pence, though the average price of meal for that seven years was nine-pence halfpenny; but in the course of next six years forward to 1763, the price of labour increased to nine-pence and ten-pence, whereas the average price of meal during that period was under nine-pence. The price of labour from 1775 continued much about ten-pence, until 1780 and 1781, when some got up to a shilling; yet the average price of meal for these six years was only nine-pence two-twelfths. The next two years, the price of labour rather fell, although meal during that time, at a medium, was nearly thirteen-pence per peck.

The price of labour fell again in 1782, and continued much about ten-pence a day, until 1786, notwithstanding that the price of meal, at an average, during these six years, was nearly thirteen-pence per peck; but in the course of next seven years the price of labour rose to fifteen-pence per day, when the average price of meal during that period had been at eleven-pence halfpenny; and in 1792, when the price of labour

hour of all denominations rose fully a fourth part, although the price of meal for twelve months before that rise took place had not exceeded twelve-pence per peck; we also find that servants wages, who are victualled by their master, have increased as much in the same proportion as that of day labourers.

It has always been a common remark, that the price of labour, and all articles produced by it, never failed to start a little when the price of meal came to be very low, and to fall a little when meal raised. The high price of labour at present, (1795,) is not to be imputed to the high price of meal; the medium price of meal for the four last years of the last century was fourteen-pence per peck, when a day-labourer only earned Sixpence.

The decrease in the value of money has been one cause; the great employment that has been struck out from the increase of trade and manufactures is another, and the hands taken to the land and sea service in time of war has never failed to operate very powerfully to that effect; and if the rage for conquest in unhealthy climates should prevail, both agriculture and manufactures may feel a want of hands.

It is natural to imagine, that the growing increase in the price of labour would have begot an anxiety for the value of time, but the reverse has taken place in this county.

Such influence has the indulgence had, which in general has all along been given by gentlemen farming, gentle farmers, and those who farm for amusement, that most of the farm-servants now do fully a fourth less work than was done by them formerly when they had but a third of the wages. Many of them do little else than work when the horses work; which, in general, does not exceed eight hours a day; and, for four months in the year, but five. Formerly the ploughmen, or farm-servants, thrashed a full third of the crop, beside various jobs that now others must be hired for. A farmer who had eighty or ninety acres in corns, never kept more than one man to thrash; and although, on a farm of that extent they used to keep two four-horse ploughs, a boy always drove one, and in common a half-grown lad the other.

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The same indulgence has introduced, (and is still increasing,) an inactive deliberate motion, in most of the operations of farm servants, that is not to be found amongst tradesmen and manufacturers. A house servant - girl is at work a third more hours in the day than the men-servants are, and at nearly as hard labour. The high idea entertained of the profits to be made by farming makes all little matters to be overlooked, and considered as trifles not worth the minding; but the importance of attention in saving expence is great in all occupations; and, so far as I could ever discover, has been the chief cause why so many gentlemen were losers in farming their own land, their crops in general were not so far defective.

It is deserving of remark, that the price of work by the piece has not increased in proportion to the price of day's wages. Thrashing per boll is nearly the same as when the highest wage a day was but eight-pence. Digging and trenching, the same; potatoes hoeing and ditching very little; which shows the advantage of working by the piece; and that, by being accustomed to a little exertion, a more speedy mode of execution is acquired.

Some are of opinion, that if there were a free importation of grain at all times, provisions would continue to be greatly cheaper than they have been, and of course labour lower, and every article of manufacture furnished at an easier rate, which would give British goods a preference in foreign markets, and make trade flourish to a higher degree than it ever can under such restraints. And tho' cultivating the ground, and raising grain might be less attended to, yet the country would be amply repaid by the increase of trade, which would increase the demand for the butcher meat, and establish a consumpt for the cattle that were fed where grain used to grow.

However plausible this appears, there are several circumstances greatly against it. There have, no doubt, frequently been times, for years together in succession, that grain could have been imported at a lower rate than it could have been sold at in this country, any time for an hundred years back; at the same time, we know, that our ports have been open for
importation

importation for years in continuance, when the grain in our markets remained extravagantly high. The consequence that would follow from grain being at a very low price for a course of years, would be, in the first instance, the ruin of the corn farmers; a circumstance that at the time might not affect manufactures, but the measure that the farmers would be drove to, in time, would affect them very sensibly: cultivating the ground, and raising grain, would in a great measure be given up, and grazing become the chief object in farming. A decrease in the number of farmers would follow, with a great part of all those employed in and for agricultural purposes, viz. labourers, wrights, smiths, tailors, weavers, masons, millers, mill-masters, and others, too tedious to enumerate, who find employment in supplying all these with various articles which they require, and thus diminish, in no small degree, a class of the people who in a great measure may be called the source of population, that replenish the towns and cities, and the fields become more and more less productive. The encouragement that has been given for raising grain has been the means of reclaiming many a thousand acres, that did not produce yearly a shilling the acre, to be now worth from five to twenty shillings for pasture; and there remain as many thousands yet in a state of nature, which will all continue as they are, should such a measure take place; and even a great part of what has been improved, is still not only susceptible of more improvement, but if not further cultivated, will fall back to nearly their original state.

If such infatuation should ever be the state of Britain, the chief dependence of the inhabitants for bread must rest on importation; and have we not found, again and again, that grain is not to be got abroad at all times on easy terms? Have not the ports often been open for oats for years together, without being able to procure a quantity sufficient to reduce the price of meal, or even to keep it down to within two-pence or three halfpence of the price that opened them, and frequently not to be got so low abroad as oats were selling at home?—and last year, had it not been for the internal resources in this country, the people would have experi-

enced a famine ; nay, had there been a free exportation, that would have been the case. It is said, the times, of late, have been singular, and may never occur again ; but there is no security for that, nor that the importation of grain from those countries on whom we depend most for it may not sometimes be prohibited, as it frequently has been ; and if the price of grain has hitherto risen so high at times as to be considered as an impediment to manufactures, when we had all the grain that the farmers in this country would be induced to raise, with the addition of what was to be procured elsewhere, to what height must it have risen in such times, had we been deprived of our home supply ? Thus, the probable effects of such a measure, by discouraging agriculture, would be to diminish population, and at times increase the price of grain to a greater height than otherwise it would have come to.

Let us next view the probable salutary effects on manufactures by so great a sacrifice ; they undoubtedly would have provisions at times, considerably lower than they will ever be while the corn laws are in force ; but then, on the other hand, grain at other times would rise to a greater height than it has been accustomed to do during the existence of these laws, when deprived of that grain which the farmer by them is induced to bring forward. Facts are the best evidence, and experience a much surer guide than the plausible conjectures of speculation. We find, that ever since these laws were properly established, the price of grain has varied less, notwithstanding the great decrease in the value of money, and increase in the price of labour, to the same height as it had frequently been before they took place, until July and August 1795, when an over-anxiety excited an alarm that brought the price of wheat to a pitch unknown in this country, and if we had not then had grain of our own, it could not have been got any where else sufficient to support the inhabitants at the time. In former times, the grain came often to be very low, yet it never continued long at that rate ; and it appears in the votes of the House of Commons in the year 1756, to have been reported by a committee appointed to inquire into the cause then of the high price of grain ; that
upon

upon making inquiry for a hundred years back, prior to the 1750, the medium price of wheat during the first fifty years far exceeded the medium price of wheat during the last fifty; and, what was still more surprising, the medium of the price of wheat for the first fifty was as high as the then price which was so much complained of.

It is to be observed, that though in former times grain came often to be very low, yet it never continued long at that rate; but admitting then, that grain was to sell as low as ever it has been known, and to continue at that rate for four or five years, which is as long as at one time it seems in general to have done, what would be the probable consequence of such temporary cheapness? Not industry and lowering the price of labour, or more happiness and comfort to the people, but the reverse. If we are to judge from experience, it has never failed, that labour, and all articles that depend upon labour, started whenever grain became uncommonly cheap, and fell somewhat when the price of grain got up. What dissipation, idleness, and indiscretion, have been seen and felt, in times when the price of meal fell to eight-pence or nine-pence the peck? and, on the other hand, what general distress and calamity, which has never failed to ensue, when the price rose to fifteen and sixteen-pence the peck? In how much greater degree would all these evils be increased, were the price at one time to fall as low as seven-pence, or six-pence, and other times rise not only to fifteen or sixteen-pence, but in all probability to eighteen or twenty-pence? for, was the price to be ever so low, and even continue for years, that class of people would have little provided against the returning high price; therefore the greatest act of friendship that can be done, to all who have to subsist upon a small income, is what tends to keep the price of vivres the nearest to an equality at all times. The corn laws have hitherto operate greatly to that effect, although the medium price there fixed should be somewhat high.

Granaries have been proposed as more efficacious; and the Dutch example held out as an instance how well a nation may be supplied with grain, though they raised but little

themselves. The situation of Holland and Britain differs in many respects: the Dutch were drove to that measure from necessity; they are joined [to a large continent, and, by an inland navigation, procure supplies from parts where Britain cannot always have the same access, nor any time at the same cost. Besides, the demon of jobbing so pervades the genius of this country, that money laid out in a public concern, in general, goes short way by what it does when laid out by an individual for his private interest. But though the Dutch, who are drove to it by necessity, and from singular circumstances, make shift to provide themselves with grain without growing much, would it not be rash in the highest degree, in our insular situation, to try the experiment, and rely on probabilities? to take a step that would tend to discourage the cultivation of our own land, and run the risk of making the inhabitants dependent on foreign states for the bread they are to eat, committing themselves to chance, and the political views of princes, whether they shall starve or have subsistence, when they have it in their power to be otherwise.

The cultivation of the land in Britain is the most natural, and the surest resource, for supplying the inhabitants comfortably with provisions, and increasing population, and although the interest of agriculture and manufactures are interwoven together, yet in every country where the soil can be rendered productive, agriculture ought to be the first object. Trade and commerce, with many of our manufactures, may change their place, and thrive equally well elsewhere. But the soil is local and permanent, and will continue to produce while the inhabitants continue to be industrious; and if for want of trade they should become less opulent, still they will have it in their power to enjoy plenty and be comfortable.

THO. SCOTT.

CRAIGLOCKHART, 23d Dec. 1795.

APPEN-

APPENDIX.—No. 10.

On the CULTIVATION of BEES.

[*The following is extracted, (with the permission of the Author) from BONNER's ingenious "New Plan for speedily increasing the number of Bee-Hives in Scotland, &c. Edinburgh, 1795."*]

AN Y person, who considers how very abundantly Scotland is supplied by nature, with food proper for bees, throughout almost every county in the kingdom, and observes how very few bees are reared, notwithstanding these great advantages, must be surpris'd that so little exertion has hitherto been made in that line. For instance, were we to consider, that some parishes, which might abundantly maintain 300 hives in each of them, have not at present 20 or 30, we must be surpris'd at that infatuation which has hitherto prevented us from attending more to our own interest. Were we to consider our large extended heath-covered moors, and beautiful clover fields, with the great quantities of runches, wild mustard, &c. that grow spontaneously in our corn fields, together with the many elegant gardens, nurseries, &c. rais'd by art, in the neighbourhood of this metropolis, and almost every other town in Scotland, as well as the country seats of our gentry, together with those numerous wild flowers that grow in our meadow grounds and pasture lands, we might justly say, "*the harvest truly is great, but the labourers are few.*"

Such

Such reflections have often struck my mind, when I have seen extensive fields abounding with white clover and heath, where the flowers, like the stars of heaven, or the sand on the sea-shore, could be numbered, not by units, tens, hundreds, or thousands, but by *millions*!—Suppose, for example, 1 square yard of heath or clover to contain 500 cups of flowers, each one of which contains some honey, what an immense number would be contained in an extent of 6 square miles?

Some however here may reply, that a field may be overstocked with bees, as well as with sheep or black cattle. I will grant that there is a possibility of this, but I venture to affirm, that such a thing has seldom ever yet happened in Britain; or, at least, if there is, or ever was, any one place in the island overstocked with them, there are twenty other places, which never reared the fourth part of the number that they were able to maintain.

Estimating the number of parishes in Scotland, capable of raising bees, to be only 800, which I think is below the truth, the following calculation will give a view of the immense quantity of honey that might be produced, even in ordinary favourable years.

	Hives.	Pints of Honey.
Supposing (which is moderate)	1 to produce	4
Then 1 hive in each parish, -	800 produces	3,200
Supposing the number in each parish increased to 30, -	24,000 will produce	96,000
But supposing (which is still very moderate) the number in each parish increased to 100 - - - - -	80,000 will produce	320,000
Supposing the number in each parish increased to 400 -	320,000 will produce	1,280,000
Besides wax, which, at 1lb. each hive, is - - -		lbs. of wax. 320,000

But there are many parishes in Scotland so very large and extensive, and so full of rich flowers, that I believe 1000 hives erected in each of them, would not contain bees sufficient to

to extract half of the honey contained in their flowers, in favourable weather; therefore, it would not be estimating the possible increase of honey, all over Scotland, too high, to state it at near 2,000,000 of pints of honey. For example, the parish in which I reside was so richly provided last year with fine white clover, wild mustard, and heath flowers, &c. that 1500 hives of bees, placed properly on it, would not have nearly exhausted its flowers of their honey. To what an astonishing extent then might the bee-husbandry be carried *?

With regard to the profit arising from bees, one consideration should not be overlooked, *viz.* that almost the whole produce, arising from the sale of both honey and wax, is in a great measure clear profit; as bees, and bee-hives are, particularly in Scotland, equally free from rents and taxes; and the culture of them does not in the least injure or impede any other improvement, in any respect. Nor do they require a constant attendance, as most other articles of improvement do; for a proper person might easily oversee, with a little assistance in swarming time, at least 500 bee-hives. And as Nature has amply supplied them with food, and with powers to provide it for themselves, they put their owners to little or no expence for that article; which cannot be said of any other of our servants whatever.

Thus, by following the above plan, with a little attention and exertion on the part of our landed gentlemen, such a number of bee-hives would soon be raised all over the kingdom, that the quantity of honey and wax would be increased to such an extent, as to produce the greatest advantages to the nation at large, as well as to the private proprietors of the hives. All the money sent to foreign markets for these commodities would be kept at home; which would be a saving of

* But it is necessary to caution the reader here, that, in a very bad season, it perhaps could do little more than produce the fourth part of that quantity; not for want of abundance of flowers with honey in them, but for want of favourable weather for them to go and collect it,

of perhaps no less than 50,000l. a-year; and honey would be produced in such abundance at home, as to supply the poor, as well as the rich, not only with a delicious *luxury*, but also with an excellent substitute for some *necessaries* of life.

It might, for instance, be converted into *mead*, a fine well-tasted wholesome liquor, which would prove an excellent substitute for strong ale and porter, and could be sold at a very moderate price. A weaker kind of mead, called *bragwort*, could also be made of it. This is an agreeable, wholesome liquor, much esteemed by many, who use it as a substitute for small beer. When properly made, it will keep long; and when of a proper degree of strength, it is so highly exhilarating, that many persons have been sent home half intoxicated with it.

The increase of the quantity of honey would also reduce the price of it so much, that, instead of paying 10d. or 1s. *per* pound for it, as at present, it might be sold so low as 3d. *per* pound, in which case it would prove an excellent substitute for butter to the poor. Even at the present prices, it is already used by many persons mixed with butter.

As to the wax, almost every person knows the great uses made of that article, in medicinal preparations, wax candles, sealing wax, &c. &c. as well as the high esteem in which wax candles and wax tapers are held by persons in the higher ranks of life, on account of their clear light and odoriferous smell, as well as their freedom from all danger of greasing any thing, as tallow candles do, when a drop falls from them.

I proceed next to show in what manner the number of bee-hives may be speedily increased in Scotland. If a gentleman of property has a proper situation for bees, and the above reasoning has inclined him to commence the cultivation of bees with spirit, let him apply to some person tolerably skilled in that branch of science, and let him purchase 100 or more bee-hives, in the month of August, and place them properly, according to the directions which shall be laid down hereafter. Let him next rear a sufficiency of turnips in their neighbourhood, that they may blossom next spring; and in the month of February, let him sow some mustard-feed, and
some

some furze and broom upon dykes, or waste ground. Gentlemen of property, who have any ground proper for planting, should by all means plant a number of plane-trees and fallows. They should likewise sow a good deal of white clover, sweet refida, or mignonette, &c. with any other flowers that will grow upon the ground, either by nature or art.

In winter, particular care should be taken to preserve the bees from cold; in spring, from famine, and robbery by other bees. And when they are ready to swarm, great care must be taken to lodge them in proper habitations.

With such attentive management, I can venture to assure all who will make the experiment, that 100 well chosen stock-hives will, in a tolerably good season, produce from 180 to 200 or even 220 hives, whatever more.

Supposing that there are, in May 1795, twenty stock-hives in each parish in Scotland, the amount in 800 parishes would be 16,000. Then, supposing each of these hives to throw one swarm, which would probably keep through the winter, in September we would have 32,000 stock hives. At this period, let every gentleman who rears bees, keep all his hives, young and old, for stock-hives, that are fit for it; let the poor, who are able, do the same with theirs;—and let those, who are not able to lie out of the produce of their bees, sell them to those who are inclined to purchase them for stock-hives. By doing this, they will raise as much honey as if they killed all the bees, and sold the honey and wax, and with far less trouble.

On these principles, by keeping 32,000 stock hives, with proper management, during a tolerable season, and always preserving all that will preserve, for the space of seven years, the stock would increase as follows, viz.

			Hives.
In the	1. year, Sept. 1795,	there would be	32,000
—	2. —	1796, —	64,000
—	3. —	1797, —	128,000
—	4. —	1798, —	256,000
—	5. —	1799, —	512,000
—	6. —	1800, —	1,024,000
—	7. —	1801, —	2,048,000
(M)			Thus

Thus, within the short period of seven years, the number of our bee-hives would be increased to no less than *two millions and forty-eight thousand hives*. But allowing the forty-eight thousand to be discounted for dead hives, there would still remain two millions of stock-hives. Although this number may appear large, yet there is no reason to suppose that the calculation is either impossible or improbable. But even dropping the one half of this number, upon the supposition of losses by bad seasons, &c. there would still remain, at the lowest estimate, a clear *million* of stock-hives; which, next year might produce *four millions* of pints of honey, and *one millions* of pounds of wax, and still keep the stock entire. With such a quantity, indeed, of these useful animals, and valuable commodities, we might rest contented; as such a quantity, besides every other advantage, would afford employment to hundreds of old and poor people to watch them in swarming time, and to make hives to receive the young colonies.

Of the Apiary.—As a general rule, place your hives where they will be least exposed to the wind, and enjoy as much of the influence of the sun as possible; for wind always retards the bees in their work, while the sun's beams invite them to it. Although it is well known, that bees will thrive well in high and windy situations, yet a low one is always to be preferred. In the neighbourhood of the apiary, there should be abundance of flowers, from which the bees may collect their wax and honey.

Were a choice allowed me where to place my bees, it would be in an early situation,—a hollow glen by the side of a rivulet, surrounded with abundance of turnips in blossom, in the spring,—mustard and clover in summer,—and heath in the latter end of summer and harvest; with a variety of other garden and wild flowers in their seasons. However, I would not be understood as if I hinted that bees would not thrive unless they were placed in such an advantageous situation, as the contrary can be proved: for bees have thriven amazingly well in places where they were not within reach of many of the

the above-mentioned flowers; but although they will do well in most situations, and fly far for food, yet they will thrive far better when situated among or near good pasture, and surrounded with abundance of food. This leads us forward to shew what is the proper pasture for bees.

Food.—Among the great variety of flowers, which wise Nature has so profusely laid before our noble insects, from which they may abundantly supply themselves with food, we shall, in the first place, give some particular account of those five principal ones in this country, from which bees extract vast quantities of honey;—viz. turnips, rape, mustard, clover, and heath; and then some account of many other excellent flowers which bees feed on.

Turnips, in particular, blow early in the spring, and continue long in flower; and they also yield both honey and farina, by which the bees are greatly excited to go abroad, and work upon them; when perhaps, in late situations, they have scarcely any other flower to work upon. In such places, therefore, it is highly proper that turnips be sowed, and allowed to remain in the ground during winter. These, yielding their flowers from the middle of March to the end of April, will afford the bees six weeks good pasture, and thus render them equal to those in more favourable, or earlier situations; whereas they would perhaps have scarcely had any other flower to work upon, that could do them much good. I would, therefore, strongly recommend to all proprietors of bees, particularly those in late situations, if they can by any means, to let always as many turnips run into blossom in the spring, as may be sufficient to afford plenty of early pasture for their bees to work on*. Thus the rich may supply themselves with that feed for sowing, and the poor will have it to sell to those who need it, which will enable them to pay the rent of the ground

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they

* Ruta-baga, or Swedish turnip, would answer well for this purpose, as it is equally good for cattle after it has blown, as before.

they grow upon. But here it may naturally be asked, By what rule are we to judge what quantity of ground will yield a sufficiency of food for any given number of hives? I answer, that very little ground will keep many hives abundantly at work; as, for example, one acre of good land would not be overstocked with 20 hives; and, consequently, the twentieth part of an acre would keep one in constant employment.

The rape in blossom answers the same end to bees as the turnips; and as it is a little later of flowering, it will yield the bees a fresh and seasonable supply, when the turnips begin to fade, and thereby keep them constantly at work till the latter end of May, when all the herbs of nature will, as it were, vie with each other who shall contribute most to supply this noble and virtuous race with abundance of the sweetest nectar. Then, at this season, the balmy plane-tree regales them in the morning, before the drowsy herd ascends the hill to relieve his imprisoned bleaters; and the gold-like furze, mustard, and broom, invite them to feast till the day decline.

Garden and wild mustard, with runches of all kinds, bees are very fond of, and work keenly thereon; and these flowers are attended with this advantage, that by sowing their seeds at different times in the Spring, their flowering may be so protracted, as to afford the bees a sufficiency of pasture during the whole working season.

In June comes the white clover, which continues long in blossom, and also yields abundance of the finest of honey: and wherever the proprietor of bees has it in his power, he should be particularly attentive to raise it in his pasture lands; and, as I hinted with respect to turnips and rape, the clover grass will pay the rent of the ground, exclusive of what advantage the bees derive from it. So fond are the bees of this flower, that whenever it appears, they will desert and overlook many other excellent flowers, as unworthy of their attention, and eagerly dart upon it, and work and sing thereon all the day long, until the cold evening chase them with reluctance home to rest: but as all nature's beauties
fade,

fade, and thereby give way to their successors, so does this beloved herb, as, about the end of July, they begin to blacken, and the balmy dew to forsake their sweetest lips; then our heroes go in search of fresh provisions, and in their rambles, as they skim over our lofty mountains, are attracted by the blue heather bells, which are numberless as the sands on the sea-shore; each one of which, by the assistance of Phoebus, discloses its sweets, and thereby invites the transported bee to rifle all their charms.

Heath is attended with this advantage, that it needs no culture nor rearing; but, on the contrary, grows spontaneously, in too great abundance, in many places; as most certainly the greater half of Britain is covered with it; but like the clover, it yields also vast quantities of the finest honey; and, when the month of August is favourable warm weather, no thriving hives of bees, placed near it, need fail, in a short time, to enrich themselves with plenty of honey.

The flowers of furze, broom, and plane-tree, as formerly hinted, are highly grateful to bees, as all of them afford abundance of matter to collect their honey and wax from. Furze in particular, generally flowers early, and continues long in blossom.

Besides the flowers above mentioned, there is a great variety of others, which, in their different seasons, afford employment and materials for the bees; such as lilies, rose-marys, yellow gowans, and the blossoms of crocuses, snow-drops, o-ziers, fallows, vetches, alders, poppies, beans, gooseberry bushes, and fruit-trees of all kinds. In short, I know no flower that they will refuse, when they are at a loss for variety; for, like the poor among mankind, when a choice is denied them, they will be contented with coarse fare; but give them their option amongst a variety, and it will soon be perceived how little they value the gaudy *show*, when put in competition with *substance*; for they will fly over the finest gardens, and the most beautiful flowers, and cheerfully feed on their beloved turnips, runches, clover, and heath.

There is one thing very observable, that whatever flower a bee first pitches upon, she always continues to work upon the same

same species, till she is loaded, although she should be obliged to fly over better kinds, and even to some considerable distance for them; but, if the bees cannot obtain a full loading from those flowers which they prefer, they sometimes make up the remainder from other flowers.

How to choose a stock—Any person, who intends to erect an apiary, must take particular care to have it filled with proper inhabitants. He must be peculiarly attentive to this, as all his future profit and pleasure, or loss and vexation, will, in general, depend upon it. He must therefore pay the utmost attention to the choice of his stock hives; for the man who takes care to keep good stock hives will soon gain considerably by them; but he who keeps bad ones, will, besides a great deal of trouble, and little or no success, soon become a broken bee-master.

In September every stock hive ought to contain as much honey as will supply the bees with food till June following; and as many bees as will preserve heat in the hive, and thereby resist the severity of a cold winter, and act as so many valiant soldiers, to defend the community from the invasions of foreign enemies in spring.

Therefore the bee-master should purchase a proper number of hives in August, or September, when they are at the cheapest rate. They should be full of combs, and well stored with bees and honey; and should weigh at least 30lb. each; if heavier, so much the better; for light hives run a great risk of perishing by famine, unless the bees are supplied with food; which will cost as much expence, and a great deal more trouble, besides a considerable risk of their dying at last, after all this extraordinary trouble and expence. Whereas, a well-chosen hive of 30lb. weight, allowing 12 lb. for the empty hive, bees, combs, &c. will contain 18lb. of honey, which will supply the bees with food till next June; a time when, it may be presumed, they will find abundance of provisions for themselves among the flowers.

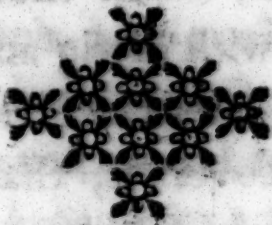
When a choice can be obtained, the youngest hives should always be preferred, because old hives are liable to vermin,
and

and other accidents. But although a hive should be four or five years old, it should not be rejected, if it possesses these two essential qualities, plenty of bees, and abundance of honey; but if either of these be a-wanting, the purchaser will regret his bad bargain when it is too late.

Cover for hives.—The best of all covers for hives, however, that I have yet seen or heard of, are such as I ordered a potter to make for me of burnt earthen ware. They are made in the form of a hive, pretty strong, about 21 inches wide, and 12 deep; with a circular edging turned up at the skirts, and a spout about an inch in length. These, being placed above the pob tow, or straw, keep it close to the hive, and may easily be taken off, or put on at pleasure. The spout being placed behind, all the water runs off at the back of the hive. The hives, when thus covered, may be compared to a man's head with a wig and hat upon it; the pob tow resembling the wig, and the earthen cover the hat. The only objection to these covers is, that they are brittle and easily broken; but the care that every good bee-master will readily bestow upon his hives in any case, is sufficient to preserve them from accidents of this kind. I sold above 30 of these covers to a gentleman in Northumberland about three years ago, and I have reason to believe that there is not one of them yet broken.

Stings.—The stings of bees have different effects on different persons. On some persons, the sting of a bee produces neither inflammation nor pain. Such people need use no precaution, even when they are sure to receive many stings. Upon others, again, the sting of a bee occasions such exquisite pain, accompanied with swelling and inflammation, that nothing can terrify them more than the sight of a bee. This last class should not be discouraged. I myself have felt very different effects from their stings at different times. The seldomer I am stung, and the longer interval that occurs since I was last wounded, the greater pain I feel, and the more I swell; but when I am stung twice or thrice in a day, I value

lue it not a pin. I have sometimes received forty stings in a day without swelling in the least. The reason of this I presume not to account for; I only mention the fact, leaving it to medical people, or those who have studied the nature of animal poisons, to investigate the cause.



APPEN-

APPENDIX.—No. II.

*The following very valuable Communication was received
from THOMAS MACKNIGHT, Esq. of Ratho.*

SIR,

It will not be in my power to complete the general account of my farming operations; requested by the President of the Board of Agriculture, so as to send it to you by the time limited; but seeing you are anxious to obtain at least a general idea of the expence I have incurred, and the result of the trials I have made, to improve uncultivated and unproductive land, I shall now endeavour to comply with your desire, and at the same time communicate the observations which have occurred to me upon that subject, a subject which, in my opinion, well deserves the attention of every man who wishes to promote the prosperity of his country. I shall add part of the general account requested by Sir JOHN SINCLAIR, containing an account of the expence and returns of one field, consisting of 10 acres, which I cultivated, during a course of eight years previous to the year 1795, in the manner too frequently practised, that is to say, doing little for the land, and receiving small returns: also, I shall give an account of the expence I was at in the course of the last year to cultivate this field, in a manner very different, but whether more prudent, time only can determine. Be the event, however, as it may, I am willing that others should receive every possible advantage from the experiment I am making; and for that reason I offer it to public view while it is actually carrying

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on, that those who are inclined may have an opportunity of examining the process, and observing the result.

To people in my situation, (that is to say, without experience at the time I commenced my agricultural operations,) such an account as I now offer may be agreeable, because it may enable them to form a judgment of the probable expence, and returns attending the business of farming, in which they may be fond of engaging. When I began, I entertained no doubt of its beneficial consequences; and though I was sensible an experienced farmer might carry it on, not only with more judgment, but with more economy, and therefore might hope to reap more advantage from an equal quantity of stock; yet from my previous calculations I expected a profit more than sufficient to compensate the risque I must encounter, and the time during which the capital employed must remain unproductive of any tangible advantage. Pleased, therefore, with the hope of future benefit, and happy in the meanwhile with the employment which the undertaking afforded, I carried on my speculation without any apprehensions of loss; and I continue now to carry it on without fear of losing, notwithstanding the generally received opinion, that no person in my circumstances can farm to advantage. I am far from thinking that *a man who is ignorant of agriculture can manage the business of farming*; but if he inclines to employ his money in that way, he may hire a skilful person to oversee his servants, and direct the necessary operations, and in that case I venture to assert, from my own experience, that a less degree of attention is requisite, on his part, to secure success, than in any other speculation with which I am acquainted, where an overseer or manager is employed; and even that degree, far from being troublesome, requires little more than walking or riding about his fields from time to time,—an exercise which most men are fond of enjoying.

The profit to be derived from farming depends no doubt on a variety of circumstances. But so far as I can judge, nothing contributes more to render it highly advantageous than a Capital to carry it on in a liberal manner; by which I mean a stock sufficient to put the land in the highest order

order possible,—to labour it properly,—and to manure it well. For in every instance, where I have had an opportunity of observing, those farmers who fail to make money by their business, fail for want of a sufficient capital to carry it on in the most advantageous manner, rather than from any thing in the nature of the business itself, which is certainly less liable to risque than any other with which I am acquainted.

For these reasons, I am of opinion, that nothing can be more conducive towards promoting the agriculture of Great Britain than to shew men who are possessed of capital, that altho' they have no skill nor experience in agriculture, their money may be employed in farming, with as much safety, and with as much certainty of profit, as in any other speculation whatever, where they are obliged to avail themselves of the skill and experience of other people, hired for the purpose of carrying it on; and that many speculations in various branches of business, are managed in this way with great profit to the undertaker, is a thing well known; nay, in the business of farming itself, it is often practised in fact: opulent farmers trusting the care of their *led farms* to a faithful servant, or perhaps to a partner who manages the farm.

Having advanced an opinion which I know is not generally received, and said thus much in support of it, because I am convinced that it is founded upon truth, and that were it acted upon by men possessed of capital, the agriculture of Britain would be carried on to much greater advantage than it is at present; I shall now proceed to the business which is more immediately the purpose of this letter, and which will serve to corroborate the opinion I have advanced.

Gogar moor lies in the parish of Ratho, nearly six miles west from Edinburgh, and about five miles distant from lime, which is sold at the kilns at 16 d. the boll of shells, reckoned to produce about two bolls of slacked lime, nearly equal to nine bushels, Winchester measure, per boll. This moor contains about 80 acres, and was a common belonging to the proprietors of the adjacent lands. It was very full of stones, many of which were so large, that they could not be removed with-

out using gun-powder. It was over-run with furze, and interspersed with hollows, some of which contained water during the whole course of even a dry summer. The grass growing on this common was of little value, and I do not imagine the proprietors, or their tenants, who occupied the adjoining lands, ever derived any advantage worth reckoning from the possession of this moor before the year 1780, about which time it was divided by mutual consent.

After the division was accomplished, Mr John Christie, (who occupied a small farm adjoining to the moor,) ventured to take, upon a lease, 42 acres of this unproductive land; three years free of rent, and twenty-two years at five shillings an acre per annum. His lease commenced in the year 1781. Before I came to the neighbourhood, (which was in 1787,) he had obtained some crops from the part he had then improved; but from what I learned, these were far from luxuriant. After I settled in the neighbourhood, having some property in the moor, I gave particular attention to his mode of improvement, and found that his great object was to get it under the plough at the least charge possible. With this view, he was at little expence in removing stones; contenting himself with allowing road-makers and neighbours to gather such as they chose for the purpose of making roads and drains, of which he made none; neither was he at much expence in liming, or dunging. His crops accordingly, were such as might be expected from this mode of improvement. But so far as I am capable of judging, from the observations I have made in the course of the last nine years, Mr Christie has been more than repaid the money he expended, on his 42 acres, in labour, manure, and seed, together with the rent which it has cost him in the last 15 years. There are still 10 years of his lease to run, and I can venture to assert, that he may get 20 s. an acre for his part of the moor during the remainder of his tack. There is, however, much to be done before these 42 acres can be said to be improved in the manner of which they are capable. But his land lies better, and therefore, in my opinion, may be improved at less expence than the other parts of the moor; for though I am not
a judge

a judge of soils, I am informed that the moor is in general pretty nearly of the same quality.

Ten acres of the common became the property of Mr Cumberland Reid ; they lye between Mr Christie's and my part of the moor, decline to the south, and had several hollows in the surface, which rendered draining absolutely necessary to relieve it from water that formed pretty large pools after rain, and continued, till dried up by wind, or by soaking into the ground.

Mr Reid began to improve his ten acres the year after I commenced my operations ; had he led the way, I might have benefited much by following his plan. I saw that Mr Christie had done too little,—that he was too sparing of his money, and the consequence was such as might have been expected. His crops were poor. I determined to avoid his mistake, and erred on the other hand ; I undertook too much ; I endeavoured to compleat the improvement of my land principally *by labour*, without knowing that a little patience would have commanded the elements of air and water into my aid, and that one year's time would have done more towards rotting the coarse sward of the moor after one ploughing, if covered from the drought of summer by a crop of oats, than all I could do by repeated ploughings, breakings, and harrowings, in the course of one spring.

Mr Reid, after grubbing up the whins, and making some drains through his land, ploughed with a four-horse plough, and sowed it with oats, of which he reaped a tolerably good crop ; he next year began to cart dung and lime, intending to summer-fallow and sow wheat ; but afterwards let this land to Mr Dudgeon, who proceeded in the same scheme of improvement with considerable spirit, continuing to increase the number of drains, gathering the stones off the ground so far as wanted for this purpose, and filling up some of the hollows with earth where this could be easily done. He summer-fallowed, dunged, and limed, and then sowed with wheat very early in the season, giving a large quantity of seed, I believe not less than a boll per acre, and reaped in return an abundant crop, which was succeeded by another of exceedingly strong
oats.

oats. In this manner Mr Reid and Mr Dudgeon, availing themselves of their experience and ability, have derived as great an advantage as the most sanguine mind could have expected from such an undertaking. In the course of five years they have realized a very great profit upon the stock they employed, which was completely re-imburshed in the course of two years at most, and they have reclaimed, from an unproductive state, 10 acres of land, which would now sell for a large sum of money.

I come now to give some account of the mode I followed for improving Gogar moor, my share of which amounts to about twenty-five acres, divided into three different fields, lying contiguous to each other. Two of these have been five, and the other four, years under the plough. I need not enter into a minute detail of my operations; it is sufficient to say, that after clearing away the whins and stones which lay on the surface, I ploughed as deep as possible, with an uncommonly large and strong Scotch plough, drawn by two oxen and four stout horses, attended by three men, (besides the ploughman and the drivers,) to assist in turning over the furrow, which sometimes fell back, and to throw upon the surface the large stones loosened by the plough, which would otherwise have been buried under the next furrow. I marked the *fit-fast* stones discovered by the plough, and employed men to dig and raise them out of the ground with long levers armed with iron; and when they could not be got out in this manner, to bore and blow them up with gunpowder. I then drew them to the sides of the fields upon *slipes*, after which I tried to *break* the sward with heavy *breaks*, then cross-ploughed and formed the ground into ridges about 18 feet wide, sowing it with oats: from one of these fields I took two crops in succession, the first yielded five, the second four bolls per acre. I then prepared the ground for a crop of turnips, giving a large quantity of dung. They were easily kept clean, and turned out a good crop. They were succeeded by oats, which produced more than nine bolls per acre, and have been followed by another crop of oats to all appearance as good, but they are not yet threshed.

Another

Another of these fields, after undergoing the necessary previous operations in a manner similar to that above described, produced a crop of potatoes and another of wheat, both of them bad, although the potatoes were well dunged. I have since had two crops of oats in succession tolerably good, the last, however, not yet threshed.

The third field has been managed in a manner somewhat different. I ploughed it once, and suffered it to lye in that state till the succeeding year, and then, after breaking and ploughing, I sowed it with oats and got a tolerable crop; I then limed and sowed with oats, and reaped more than six bolls per acre. The last year I sowed again with oats, and had a very good crop, not yet threshed.

During the ploughing and harrowing, and in the autumn and winter, I continued to remove stones, to make drains, to level hillocks, and to fill up hollows, by carting earth into them. These operations have been performed at a very great expence; notwithstanding which, putting a fair value on the stones I obtained for roads and dykes, (exclusive of the value of the stones employed in filling drains in these fields, from which I gathered them,) and giving credit for the crops I have reaped, I do not exceed the truth, when I say the 25 acres are not in my debt. But as I have been offered a rent of more than 20 s. per acre for a lease of 19 years, I consider myself as being actually a very great gainer by this speculation, because that rent alone is at least equivalent to a gain of L. 25 for every acre of the moor which I have improved.

It is true, I have been at more expence hitherto than either of my neighbours, and at present have much less to show in point of return than Mr Dudgeon; but then my ground is more effectually cleared of stones, and, comparatively speaking, in respect to what it was, is more improved than either his or Mr Christie's, and I have reason to hope that my future crops will be obtained with proportionally less expence.

The remainder of the common, excepting about half an acre of Mr Christie's part, is improved also, and was done by the late Dr Kirkland, in a manner equally spirited, and as completely

completely as that by Mr Dudgeon, and not less profitably to himself.

Upon the whole, therefore, the improvement of Gogar moor is an incident of considerable importance in the agricultural annals of the parish of Ratho. A common containing 80 acres of unproductive land, which for ages was considered as not worth cultivation, though lying within six miles of the capital of Scotland, and within five miles of lime, has been improved in the course of 15 years so as to repay the expence of improvement, producing crops, of 12 bolls of wheat, 10 bolls of oats per acre; and every part of this moor is, in my opinion, as capable of yielding good crops, as the field which produced the above-mentioned wheat and oats.

Whether speculations of this kind are beneficial or hurtful to the undertaker, there can be no doubt that they are of advantage to the publick. In this instance, 80 acres are added to the national stock of arable land, capable of yielding food for an increased population of men, constant employment is provided for as many persons as are requisite for cultivating those 80 acres; and the surplus of food not necessary for the cultivators, and their labouring cattle, increases the fund of provisions necessary for maintaining the inhabitants of Britain who are employed in manufactures. In this point of view, therefore, the improvement of waste and unproductive land is an object of the highest national importance, and well deserves the attention and *encouragement* of the Legislature.

The present instance, however, holds forth advantages easier to be obtained. It shows, that the cultivation of Waste land is highly beneficial to the tenant, as well as to the proprietor. Mr Christie's mode of improvement shows what may be done *in a course of years*, at little expence. Mr Dudgeon's mode shews the very great advantage which a tenant may derive, *in a shorter period*, from the judicious and spirited application of money; what Mr Reid has executed demonstrates the benefit of experience. And my success may serve to shew what even an unskilful proprietor may do towards increasing the value of his estate, by improving his uncultivated

vated and *unproductive* land : and, notwithstanding his mode of improvement, from want of experience, want of economy, imposition of labourers, or idleness of servants, *may* be much more expensive than that of an attentive and judicious tenant, *yet the speculation in itself is so highly advantageous*, that it will bear very considerable misconduct before it can become a losing adventure.

From the accompts I kept, I have made an estimate of the average expence per acre, which the improvement of my share of Gogar moor has cost. The expence has, indeed, been very great ; but that must not be wholly ascribed to mismanagement ; for any person who examines the situation and surface of my part, will see that it must have been more difficult to reclaim and render arable, than any other equal quantity of the common.

One of the fields above mentioned was manured with dung, —another with lime,—and a small part of the third got neither lime nor dung, while the remaining part was dunged. The sum, therefore, which I state for manure, must not be considered as the exact value of what was laid on any one acre, but the average value per acre of what was laid on the whole moor. The same observation must be extended to the other articles mentioned in the estimate ; the expence of improving particular acres being more or less according to the quantity of whins and stones, and according as more or less draining was necessary. In respect to the returns, these also are rated after the same mode, at an average value of the produce ; but as I have taken care not to under-rate the expence, nor to over-value the returns, no person will find himself deceived to his loss, by engaging in an undertaking of this kind, provided the circumstances of the speculation are in any degree similar, and provided the soil and climate of his land are no worse than the soil and climate of Gogar moor.

Estimate of the EXPENCE and RETURNS

Attending the Improvement of one acre of land,

In GOGAR MOOR,

Being the average of the expence and returns of 25 acres
lying there :

Expence of grubbing, gathering, and burning the whins,—of spreading the ashes,—and part of the expence of the first ploughing, - - -	L. 2 10 0
Expence of digging ditches and drains, - - -	1 10 0
Expence of cleaning the land of stones, including the expence of those which were gathered, and used in the drains made through the moor, - -	9 10 0
Expence of ploughing, harrowing, seed and sow- ing, cutting, inning, threshing, &c. for four crops of grain, and one of turnips, - - -	11 10 0
Expence of manure, - - - - -	8 0 0
Total expended in the course of five years, -	L. 33 0 0

Four crops of oats, and one crop of turnips, not less in value, including the straw, than, 6l. 12s.	L. 33 0 0
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Although Gogar moor never increased my annual income one shilling till I improved it, and though I believe it was of as little value to the former proprietors ; yet in a calculation made for ascertaining the profit or loss attending an attempt to render it more valuable, a rent should be stated, and that should be reckoned at the rate which might have been obtained for it immediately before the improvement was undertaken. The rent therefore which I charge in the calculation I am now to make shall be 12s. per acre ; the reasons I could give for this are sufficient to satisfy you, that 12s. was a fair value at that time, tho' Mr Christie got 42 acres of better land at less than 5s. per acre in the year 1781. The general account therefore of the moor with me, *as a tenant*, will stand as follows :

Farm

Dr.

Farm of GOGAR MOOR, one acre.

Cr.

1795.	£. s. d.	£. s. d.	1795.	£. s. d.	£. s. d.
To fundry expenses per estimate, - - - -	33 0 0		By fundry returns in this and the four preceding years,	33 0 0	
— 5 years rent, 12 s. - -	3 0 0		— balance, carried to new account,	5 0 0	
— interest of money employed in the improvement,	2 0 0	38 0 0			38 0 0
1796. Jan. 1.	£. s. d.		By the present value of the moor, - - - -		£. s. d.
To balance per contra, being the money expended on the improvement, - - -	5 0 0				

(O 2)

From the preceding accompt it appears that a tenant, the example of Mr Dudgeon, or to content himself even upon a *nineteen years tack*, improving in the very with the profit which would arise from subsetting his *expensive manner* I have done, would make the im- land at 20 s. per acre, in either case, it is plain that the advantage derived from such a speculation would be very great. But having shown that a tenant, even pose him then, during these 14 years, either to follow as unexperienced as I was, may employ money to great advantage

Farm of GOGAR MOOR, one acre.

CR.

APPENDIX.

Dec. 30 1795.	To fundry expenses per estimate, - - - - -	£. s. d.	£. s. d.
	— interest of money advanced in making the improvement, - - - - -	33 0 0	33 0 0
	— balance, - - - - -	2 0 0	2 0 0
			40 0 0
1796. Jan.	By fundry returns per estimate, - - - - -		33 0 0
	— stones for roads, - - - - -		5 0 0
	— stones for dykes, - - - - -		2 0 0
			40 0 0
	By balance per contra, - - - - -		5 0 0
	— value of Gogar moor in its present state, which might be let for 20 s. per acre, or fold for - - - - -		25 0 0
			30 0 0

I am

I am convinced that my neighbours, and those who have observed the progress of the improvement, the crops I have reaped, and the present situation of the land, and those who are acquainted from experience with the cost of reclaiming, and the crops produced by such kind of ground, will readily allow that I have not under-rated the expence I have been at, nor overvalued the crops which I have reaped. In respect to the stones, they are, no doubt, of more or less value, in proportion to the use which a proprietor has for them. If he wants them for the purpose of filling drains in other land,—for roads,—for inclosures,—or for building,—they are really worth as much as an equal quantity would cost him. In the present instance, they are of still more value to me than I have reckoned them at, because they are necessary for the roads, drains, and dykes, which I think it for my interest to make; and because I could not procure an equal quantity from any of the neighbouring quarries, for less, (including the expence of carriage) than almost double the sum for which I have given credit. The rent also is greatly below what I have been repeatedly offered for the land, and 25 years purchase cannot be reckoned too high a price on the supposition of its being sold; yet at these rates, upon an advanced stock, which at no period amounted to more than L. 10, there is realized in the course of five years a nett profit of L. 30. And it must be considered at the same time, that the speculation was *perfectly safe in its nature*, and that although it was carried on by an unskilful landlord, under almost every disadvantage to which such an undertaking can be subject, yet the *result* has been favourable beyond what could have been expected even almost under the best management.

If it shall be objected to the above statement, that the landlord might have let his land in 1791 without any trouble for 12s. an acre, and might then have sold it for L. 15 (25 years purchase of the rent,) I answer, that no doubt he might; and I allow that the L. 15 might, in the course of the five years, have yielded him an interest amounting to L. 4, making in all L. 19; but after deducting this from the L. 30, evidently made by the speculation, there remains a difference of L. 11
gained

gained upon a stock of L. 10, over and above the legal interest of L. 2 charged in the expence, making in all L. 13 gained in the course of five years, or a profit of 130 per cent. on a stock of L. 10.

After the above statement, which shews, that the improvement of unproductive or uncultivated land, is highly advantageous, even when executed by unskilful and inexperienced tenants or landlords; permit me to shew the very great advantages derived from such undertakings, when executed by judicious and experienced persons, such as Mr Reid or Mr Dudgeon. In the case of their improvement it appears that the landlord was repaid the amount of his outlay the very first year, and immediately let his land for 20s. per acre; had he then sold it at 25 years purchase, the nett profit gained, in the course of less than twelve months, would have been 500 per cent. on a stock not exceeding L. 6, employed in a speculation which, in my opinion, is perfectly safe for those who are fortunately possessed of such land, and who know how to avail themselves of this kind of property.

The tenant, in this instance also, whose knowledge enabled him to judge of the value of such land, did not hesitate to give 20s. per acre of rent, nor to employ a capital of perhaps L. 12 in its cultivation. In the course of two years, his capital was re-imbursed with a profit of L. 6 at least. In the beginning of the third year, and during its course, the land costs him in labour, seed, and rent, less I am sure, than 3l. 10s. per acre, and before the year expires, he gets into his barn-yard a crop worth L. 11 at least; here then is a profit of more than 200 per cent. gained in less than 12 months. How his future crops may turn out can only be conjectured, but I see no reason to doubt their continuing to be highly lucrative.

I have, indeed, heard it asserted, that when uncultivated lands are brought under the plough, they will yield for some years, crops superior to what can be afterwards obtained from them by any management whatever: this may be the case; but I am inclined to believe, that resting them from the plough for a proper number of years cannot fail to restore
their

their primary vigour, or power of producing good crops; and I see no reason for supposing that a repetition of labour and manure will not again call that power into action with equal success.

In the shire of Ayr, the advantages of *resting* land from the plough has been well known for many years; and I have heard, that the late Earl of Eglintoun had the merit of being the first person that introduced it into general practice, by restraining the tenants on his large estates from taking more than three crops of grain in succession, and then obliging them, by the terms of the lease of their land, to let it lye in grass for six years.

Some time ago a farther restriction was introduced; instead of *three* crops of grain, *two* only are allowed,—and this mode of cultivating the land has been found still more advantageous, in so much, that I have heard it warmly contested, who had the merit of introducing that restriction. It is generally allowed to lye between Mr Fairlie of *Fairlie*, and Mr Snodgrafs of *Cunningham-head*. But from what I have heard, were the dates of the leases granted by these gentlemen compared together, the honour would be allotted to Mr Snodgrafs.

I have already said, that I see no reason for supposing that a repetition of labour and manure will not draw from land that has been *rested* for some years *voluntarily*, (especially after having been properly prepared and sowed with suitable grass seeds,) as good crops, at least, as it yielded after a *rest*, proceeding from the inattention or carelessness of the proprietor. But be that, however, as it may, one thing is certain; the labour of cultivation will cost less; and a saving in the expence of cultivation must, in some degree, if not wholly, compensate for crops less luxuriant. I mean not, however, to contradict the *assertion*, because I cannot do it from experience, and it would be presumption to set my opinion against that of men bred to the business of agriculture. It is a question of fact, and the decision thereof depends upon the evidence of actual experiments; whether these have ever been made with sufficient accuracy I know not, but I intend to try whether a liberal outlay upon a field which
has

hus been cultivated beyond the memory of man, will not be rewarded by crops superior to those it is known to have produced, and sufficient to repay me amply for the extraordinary expence I must incur in making the trial. In short, having improved the unproductive land which lay in my farm, I am now engaged in trying whether a field which I cultivated for eight years at little expence—reaping small crops—will not, in consequence of a more liberal outlay, make more than proportional returns. If my hopes be not disappointed, the knowledge of my success may encourage others also to cultivate their farms to more advantage, who would not venture to make so costly an experiment at their own risk. It may even be productive of greater benefit, by encouraging monied men to employ some part of their stock in agricultural speculations, which have been hitherto avoided, on the generally received opinion, that *neither capital nor industry, though directed by prudence*, will insure success in agriculture, unless the man who undertakes it has been bred to the business, and can cheerfully give the most slavish attention to the minutiae thereof.

Before giving the accompt, I promised in the first part of this letter, of *the expence and returns of cultivating the field abovementioned*, it may be necessary to observe, that I engaged in farming on a small scale, and principally with a view to amusement; but I was gradually led to extend my undertaking, and at last to pursue it *as a business that promised much advantage*. But here candour requires me to acknowledge that I am fond of agriculture, and would gratify my inclination to the employment, even at the expence of some loss.

The land which I began to cultivate, and particularly the farm which I undertook to improve, was in very bad order; and I laboured under every disadvantage that could arise from want of experience, and from want of ability to give that degree of *personal attention* which I think necessary for carrying on improvements to the greatest advantage.

In the course of six years, however, I made considerable meliorations on this farm, and notwithstanding they were effected at much expence, I have not the least reason to regret my

my undertaking, because at the end of that period I found that my money had been well employed; as I was then offered a rent for the farm, on a lease of 19 years, the *increase* of which above the original rent would have been a very high interest for all that I had expended on its improvement. But having then acquired some knowledge respecting the *expence and profit attending the business of farming*, I flattered myself with the hope, that by carrying it on, I should not only improve my land still farther, but that I should draw back the whole of the money the melioration might cost. In this hope I determined to carry on the business, together with the operations necessary for completing my scheme of improvement; and these having lately attracted the notice of SIR JOHN SINCLAIR, I was induced, by his sollicitation, to begin drawing up a very particular account of what I had done for the improvement of this farm,—of the expence it had cost,—and of the effect it had produced.

I am too conscious of my own want of skill, and ability ever to become a *good farmer*, to imagine that the measures I have pursued, or may hereafter take in the course of my practice, have been, or will be such as should be adopted by other people in similar situations. I am already sensible of many mistakes into which I fell, and *farmers* will, no doubt, perceive many more. The account, therefore, which I mean to give, is not designed for their instruction respecting a subject which they already understand;—it is intended solely for the information of those who, in circumstances similar to what mine were, might be inclined to employ their money in agriculture; and who would be fond of employing some part of their time also in superintending the operations necessary for carrying on that business, were they not deterred from gratifying their inclination by the Proverb, That HE WHO COUNTS THE COST, WILL NEVER PUT A PLOUGH IN THE GROUND. To such persons, what follows in this letter, and what will be stated in the further account I have promised, is chiefly valuable, as containing a *candid relation* of the incidents which occurred, and the mistakes which I committed, while exploring a tract which they wish to follow—of the

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methods

methods I took to attain the end I had in view,—and of the final result of my undertaking.

In 1787, I began to improve the farm abovementioned, which contains 140 acres, and is part of a more extensive purchase made by me in 1786. The value of this farm, in proportion to the cost of the whole purchase, and to the rents of the other farms of which it is composed, was about L.2940, or twenty guineas an acre,—the rent of it was L.84, or 12s. per acre, at an average. The different fields in it being of different qualities, I rated the rent of each according to its respective value, which I ascertained agreeably to the opinion of some intelligent and experienced farmers, whom I consulted for that purpose. The rent of the field in question was fixed at 16s. per acre. It is nearly square, and contains about 10 Scotch acres; the south half is almost level, the other declines to the north; the field was inclosed, but the fences were far from sufficient. The soil is thus described by a Gentleman who examined it at the request of Sir JOHN SINCLAIR:—

“ The soil of this field contains but a very small portion of
 “ putrid substances, and no calcarious matter but what is ad-
 “ ventitious. When dry, it is of a dun colour, but when
 “ burnt in the fire, becomes red, and is easily friable between
 “ the fingers. It takes a fine mould if ploughed when mo-
 “ derately wet, and contains a considerable proportion of iron,
 “ which, when the soil is burnt, is attracted by the magnet;
 “ but there is no indication that the iron is accompanied with
 “ any salt or acid. The soil is of that kind which is usually de-
 “ nominated a soft sandy loam, and is commonly termed by
 “ farmers, a hungry, greedy soil, that requires a great deal of
 “ fat dung. It appeared, upon examination, to contain about
 “ two-thirds of a fine sand, the rest being mostly of a clayey,
 “ or muddy texture, tenacious of water, and much resembling
 “ the spongy mud that prevails in some coal districts, and oc-
 “ casions so much trouble in sinking coal-pits, &c. Soil of a
 “ similar nature in the immediate neighbourhood naturally
 “ produces whins or furze in great abundance and luxurian-
 “ cy; which circumstance is a strong presumptive proof that
 “ there is an absence of all hurtful acids.

“ The

“ The subsoil consists of a mixture of those substances of
“ which the soil is composed, but not so minutely mixed. It
“ is considerably hard and compact, but not so greatly as to re-
“ sist the plough, or to be altogether impervious to water ;
“ circumstances highly favourable to many improvements in
“ agriculture. The iron appears in blotches, and streaks of an
“ ochrous colour, but is not found to be hurtful to vegeta-
“ tion. The soil upon such an under stratum may, by the
“ plough, be rendered sufficiently deep for any of the opera-
“ tions of agriculture.”

It is also thus described by an experienced farmer.

“ The field named the Middle Lochside, consists of clay
“ and sand ; it has such a quantity of clay in its composition
“ as makes it proper for wheat, but is not so strong or ad-
“ hesive as to render it unfit for producing grass, even pasture
“ grass ; but like all land that is not of great depth, it partakes
“ of the nature and quality of its bottom, which is, generally
“ speaking, a hard Till impervious to water.

“ There is, however, a chain length, or more, along the
“ foot of the field, which has a sandy absorbent bottom, the
“ surface of which may not improperly be termed a loam ; this
“ extends about two-thirds of the breadth of the field from
“ the west side. The bottom of the other side is a blue Till.—
“ The remainder of the field has for its bottom a mixture of
“ yellow and grey Till.”

The field lies about eight miles west from Edinburgh, and
four distant from lime, which, including the carriage and ex-
pence of spreading on the land, costs about 1s. per boll of
slacked lime.—Manure brought from Edinburgh I reckon
at 5s. the cart load, of 27 cubical feet,—and I charge to
the land the same price for dung made on the farm.

In 1786, one half of this field had been in oats, the other
half in wheat. I began with cross-ploughing the ridges : 86
carts of dung were laid on the part which was in oats, and
after a second ploughing, the field was sown with barley
and grass seeds, (white, red, and yellow clover, with rye
grass.) A crop of hay was cut in each of the two succeed-
ing years ; the four following years the field was pastured,

and the eighth year it was once ploughed and then field, during the eight years were exactly as stated in fowed with oats. The expences and returns of the the following abstract of the account I kept:—

DR.

MIDDLE LOCHSIDE,---one Acre.

CR.

1787.	To 2 ploughings, &c. 8s. - - -	£.	s.	d.	1787.	By 5 bolls barley, 14s. - - -	£.	s.	d.
—	8½ carts of dung, - - -	0	16	0	—	straw. - - -	3	10	0
—	barley, 14s. grafs seeds, 16s. -	2	2	6	—	foggage, - - -	0	15	0
—	fowing, &c. - - -	1	10	0	—	120 stones of hay, 4d. -	0	10	0
—	reaping, threshing, &c. -	0	4	6	1788	— 120 stones of hay, 4d. -	2	0	0
1788.	— hay making, &c. - - -	0	14	4	—	foggage, - - -	0	10	0
1789.	— ditto, ditto, - - -	0	6	4	—	150 stones of hay, 4d. -	2	10	0
1790.	— repairing fences, &c. - - -	0	6	8	1789.	— foggage, - - -	0	10	0
1794.	— ploughing, &c. - - -	0	8	8	—	foggage, - - -	0	10	0
—	oats, fowing, &c. - - -	0	8	10	—	pasture, - - -	0	10	0
—	stoning, &c. - - -	0	18	0	1790.	— pasture, - - -	1	10	0
—	reaping, threshing, &c. - -	0	18	10	—	pasture, - - -	1	10	0
—	8 years rent, - - -	0	10	6	1791.	— pasture, - - -	1	10	0
		6	16	10	1792.	— pasture, - - -	1	10	0
		8	8	0	1793.	— pasture, - - -	1	10	0
					—	7 bolls oats and straw, -	7	0	0
					—	stones for roads and dykes, -	0	14	0
	Balance gained in 8 years,	15	19	4					
		7	19	8					
		23	19	0					

By the above, it appears that the produce, in a course of eight years, repaid the expence of labour, manure, and feed, together with the rent, and a compensation for the stock employed; and as the whole of the money advanced in that period did not amount to L. 16, or forty shillings a year, the compensation of 7l. 19s. 8d. nearly twenty shillings per annum, was a very handsome profit, and to many will appear much greater than could have been expected. To such it may occur that the rent of the field, (16s. per acre,) is rated too low,—that the value I put on the pasture is too high,—or that I have charged the labour at less than it really cost. To the first observation I reply, that the rent was fixed, (as above-mentioned,) by experienced and intelligent farmers, in proportion to the whole rent I could have obtained for the farm, and to the respective qualities of the different fields; and that rent, (L. 84) was not only thought high at the time I took the farm into my own management, but the character of the land was so bad, that my undertaking to improve it was ridiculed, as an attempt that must not only prove abortive, but highly prejudicial to my interest. Nay, after I had actually effected considerable meliorations, and was offered a rent for a lease of 19 years, that would have yielded a high interest for the money I had expended, the general opinion of the neighbourhood was, that no tenant could afford to pay that rent during the currency of the lease, and that, after a few crops, the land would be thrown into my hands in as bad order as ever, “Because it was a poor hungry soil, which “would eat out all the dung that could be laid upon it, “without yielding adequate crops in return.” But the question in the present case ought not to be, *Is the field at a high or a low rent?* but, *Is the rent charged to the field a fair rent in proportion to the highest rent I could have obtained for the farm at the time I began to improve it?* And to this question I answer in the affirmative.

I am also aware of the objection that may be stated against the probability of a field which had so little done for it in the way of manure, becoming, in so short a time, worth more than double the rent in pasture. The fact however was, that
part

part of the field had *some preparation* for the wheat crop that preceded my barley; the other part on which oats had grown got the whole dung that I charged to the field, and *the soil itself is favourable to grass*. But this is not all that can be said in support of the valuation of the pasture; I was offered 25 s. per acre by graziers, but wanting it for my own horses and cattle, I judged that if it was worth 25 s. to a grazier, it must be worth 30 s. to myself; and as I kept an account of what it yielded in pasture, I know that it was worth more than 40 s. to me.

In respect to the prices I have charged for ploughing and harrowing, they are stated agreeably to a calculation I made before I began my operations, and, in the course of nine years experience, I find, that these prices are more than the intrinsic value of such work: as to the other articles of labour I charged them at what they actually cost. But as I do not give the above accompt to shew the profit attending the business of farming, but merely to establish what the expence and produce of the field were in the mode of cultivation practised during these eight years, that it may be compared with the expence and produce of the same field, under another mode of management, I have no objection to state the expences higher, and to give no more credit for the pasture than the rent I was offered for it. Suppose, therefore, that the ploughing, &c. had cost me 15 s. per acre;—suppose also, that the expence of reaping, &c. had amounted to 25 s. per acre, which is 60 per cent. more than it really cost me, (and which is 25 per cent. more than Mr Johnston of Hillhouse found it cost him, even this last year when *wages and provisions were uncommonly high*, and when his crop was more than 50 per cent. greater than mine,—suppose also that 25 per cent. is added to the sum, which the other articles of labour charged to the field actually cost, and at the same time, suppose the pasture which I valued at 30 s. is reckoned worth less to me than to a grazier, to the full extent of all the grazier's profit, the accompt, on these suppositions, will stand thus:

Dr.

MIDDLE LOCHSIDE, ---one Acre.

Cr.

	£.	s.	d.		£.	s.	d.
To 3 ploughings, &c. 15s.	-	-	-	By 5 bolls barley and straw,	-	-	-
8½ carts dung, 5s.	-	-	-	7 ditto oats do.	-	-	-
barley and grafs feeds,	-	-	-	270 stones of hay, 4d.	-	-	-
oats, - - - - -	-	-	-	3 years foggage, - - -	-	-	-
reaping, threshing, &c. 5s.	-	-	-	4 years pasture, 25s.	-	-	-
labour, per former accmpt,	-	-	-	stones for roads and dykes,	-	-	-
allowance of 25 per cent, - -	-	-	-				
8 years rent, 16s. - - - -	-	-	-				
Balance gained in 8 years, -	-	-	-				
	18	10	7		22	19	0
	4	8	5				
	22	19	0				

APPENDIX

From the above statement, against which I pre- a stock of L. 2 : 6 : 4, which is equivalent to a gain of
sume no objection will be offered in point of low 23 per cent on the capital employed.

charges and high credits, it appears that there is a
balance of L. 4 : 8 : 5, or 11s. per annum, profit on dressing, and I was at much pains to clear it of stones,
for

for which I had use in the adjoining field, where I was building a sunk fence. I summer-fallowed, and, in the course of that operation, carried earth from the head and side *rigs* to fill up hollows in the field, that were very hurtful to the crops, by retaining water. I cleaned and deepened the ditch, on the south side, and by that means gave another course to the water of the adjacent ground, which before that time overflowed and made its way through the middle of the field. I spread over the field about two thousand cubical yards of compost, made of lime, and earth from the head rigs. This compost had lain for a considerable time, but had been only once turned. The quantity of lime in the compost amounted to about 900 bolls; the head rigs, that were bared by taking earth from them to make the compost, had fresh lime laid over them; and the hollows in the field, that were filled up with poor soil, had a quantity of lime, besides the compost, so that the field got in all about 100 bolls to the acre; to this was added stable and byre dung carried to the field, and mixed together, which having lain some time, was turned, so that it was well rotted when laid on the land; five or six rigs were dunged with Edinburgh street dung; the field, excepting the head rigs, was sowed on the 4th day of Nov. with one boll, (or 4 Winchester bushels,) of wheat, per acre, which was wetted with (stale) horse urine, and then sprinkled with lime to dry it; the appearance of the wheat at this time, excepting in these places where there is much forced earth, is not amiss. The following is an account of what the above operations cost:

MIDDLE

Q

MIDDLE LOCHSIDE, ---one Acre.

CR.

Thus

Thus have I given an account of the *expence and returns* attending the cultivation of the field mentioned in the first part of my letter; together with the expence incurred in the course of last year, by my attempt to cultivate the same field in (I hope) a better, tho' a more costly manner. The *result* of this attempt, however, cannot be given till such time as the crops, which the field may produce, shall put it in my power to ascertain what that result may be. While I was carrying on these operations, I called the attention of my neighbours to what I did. They allow, that the improvement I have made is very considerable; but some of them seem to question whether it will be beneficial to me *even as proprietor of the land*;—and maintain, that such improvements would be ruinous to a tenant. I am of a different opinion, thinking that a tenant, even on a *19 years lease*, may do all that I have done with advantage to himself; and with regard to the proprietor, *asserting* with confidence that the improvement will be highly advantageous. The question is now fairly at issue, but it will require several years to determine on the justness of our respective opinions. In the meanwhile, I offer the experiment to public observation, as of consequence, in so far as the result may serve, either to deter men in my situation from engaging in the business of agriculture, or for encouraging them to undertake and carry it on.

The following *calculation* will shew the additional expence I must incur by cultivating the field in the manner therein stated; and will also shew what the least value of the crops produced must be, in order to reimburse, in the course of four years, the whole of my expenditure. I no doubt *expect* to be overpaid by four crops; but supposing it should require six, I shall hope that the advantage arising to me, (even in the character of a Tenant on a 19 years lease,) from the succeeding crops, will greatly exceed what I could make by continuing to cultivate the field in the way above stated. But in the character of Proprietor, the acquisition of arable surface, by the removal of stones, &c. (not less than 3-fourths of an acre in the field,) is ample compensation for the use of the stock I employed in making the improvement.

APPENDIX.

123

DR.

MIDDLE LOCHSIDE, ---one Acre.

CR.

1796.	To balance of last year's accmpt, - - - - -	£. 19	s. 1	d. 11	1796.	By 8 bolls wheat, 23s. - - - - -	£. 9	s. 4	d. 0
	— harrowing, relling, &c. - - - - -	0	1	6		— straw, - - - - -	1	6	0
	— reaping, threshing, &c. - - - - -	0	17	0					
	— rent, - - - - -	0	16	0			10	10	0
	— fundries, suppose omitted, - - - - -	0	0	7		— Balance, - - - - -	10	7	0
									20 17 0
1797.	To balance, per contra, - - - - -	£. 10	s. 7	d. 0	1797.	By 7 bolls barley, 18s. - - - - -	£. 6	s. 6	d. 0
	— 3 ploughings, - - - - -	1	4	0		— straw, - - - - -	0	14	0
	— barley and grafs seeds, - - - - -	1	10	0					
	— reaping, threshing, &c. - - - - -	0	16	0			7	0	0
	— rent, - - - - -	0	16	0		— Balance, - - - - -	7	16	0
	— fundries, suppose omitted, - - - - -	0	3	0					14 16 0
1798.	To balance, per contra, - - - - -	£. 7	s. 16	d. 0	1798.	By hay, - - - - -	£. 5	s. 0	d. 0
	— hay making, &c. - - - - -	0	7	0		— Balance, - - - - -	4	0	0
	— rent, - - - - -	0	16	0					
	— fundries, suppose omitted, - - - - -	0	1	0					9 0 0
1799.	To balance, per contra, - - - - -	£. 4	s. 0	d. 0	1799.	By 8 bolls oats, 16s. - - - - -	£. 6	s. 8	d. 0
	— ploughing, - - - - -	0	8	0		— straw, - - - - -	1	2	0
	— oats for feed, - - - - -	0	18	0					
	— reaping, threshing, &c. - - - - -	0	17	0					
	— rent, - - - - -	0	16	0					
	— fundries, suppose omitted, - - - - -	0	1	0					7 10 0

I have

I have

I have only further to observe, that those who, without experience, may hereafter follow the tract which I have pursued, will have many advantages over me, in consequence of the measures now taken under the authority of Parliament, to collect and to diffuse the knowledge of the best methods of husbandry, and thus to throw light on a subject of the greatest national importance.

Before I conclude, the ardour I feel in the business of farming will, I hope, plead my apology for embracing this opportunity to offer my humble tribute of applause to those truly patriotic Persons, who have been instrumental in establishing the Board of Agriculture; an institution which must prove of invaluable advantage to Great Britain, and will reflect immortal honour on the Members of Parliament who supported, the Minister who accomplished, and the Sovereign who patronized it; and, in particular, on the Individual who planned and brought forward an undertaking so useful and public spirited, and who now dedicates so much of his time to carry the design of it into effect. The appointment of the Board, indeed, is a measure, of which the benefit will remain, when the politics of the day are buried in oblivion. It well entitles the promoters of it to the appellation of the *True Friends of their Country*, and will render their names more illustrious in the remembrance, and respected in the gratitude, of future ages, than the most splendid transactions on which popular applause too frequently confer a mistaken and temporary importance.

I am,

SIR,

Your most obedient servant,

RATHO HOUSE, }
18th Jan. 1796. }

THOMAS MACKNIGHT.

To Mr GEORGE ROBERTSON, *Granton.*

APPENDIX.—No. 12.

The following Communication, from Mr DUDGEON at Gogar Bank, respecting an Improvement made on a piece of Waste Land of 10 Scotch acres in extent, is also highly deserving of notice ; especially now, that the Improvement of Waste Lands in general, over the kingdom, has become an object of national attention.

Original state. NOT worth one shilling the acre of rent yearly.

How improved. Cleared of whins, with which it was incumbered, by the proprietor ; followed by a crop of oats, which produced more than the expence previously occasioned ; then lime to the value of L. 20 was laid upon it, when it was let at the rent of 20 s. the acre.

It was next summer fallowed by me, dunged and drained, to the amount of L. 84 of expence more, including feed and labour.

Effect. The first crop was wheat, which produced to the extent of 121 bolls, (about $38\frac{1}{2}$ bushels the English acre,) which was sold at different times, and at various prices, for L. 153 in all, besides the straw, which was fully worth the expence of reaping, threshing, &c. Next year, (1795,) it was sown with oats, but these not yet being threshed, I cannot state precisely what may be the return ; but the crop has the appearance of being 10 bolls the acre, (about $47\frac{1}{2}$ bushels the acre English.) Further, I am now offered 30 s. the acre for this field, from a respectable tenant, on a lease.

A. D.

Gogar Bank, 13 Jan. 1796.

NOTHING

NOTHING accords better than this example with my own ideas, on the subject of agricultural exertion, that it is from waste lands, and lands not hitherto completely cultivated, that the greatest profit can be made, when once they are brought in to proper order, rather than from lands already in a state of fertility. This arises, not merely from the rent in such situations being at a low rate, which is of itself an important circumstance, but from this also, that all *new* lands recently brought into cultivation, give more lucrative returns for several years at the first, than can be had from similar soils that have long been under the operation of the plough.

There are, no doubt, many such plots of unproductive ground yet remaining in the lower parts of this county, that might in like manner be rendered highly valuable, but I question much whether the greater part of the extensive waste lands in the moorish parts of Mid-Lothian, (taken notice of in Chap. XI.) is susceptible of such melioration, as it not only consists of a thin and wet soil, but is exposed to the blast from every direction.

G. R.

APPENDIX.—No. 13.

OBSERVATIONS

UPON THE

Management of the Land and Husbandry practised in that District of Mid-Lothian situated some Miles south from Dalkeith, 1795.

By ROBERT HEPBURN, Esq. of Clerkington.



ABOUT twenty-five years ago, which was the time when the writer of this was first acquainted with this part of the country, the land in tillage was under wretched management indeed, possessed by a set of tenants equally obstinate, ignorant, and poor, who (with a very few exceptions,) thought that it was necessary to plough and sow with corn as much of their land as possible, without being able to calculate, either the expence that it cost, or the small produce which they reaped.

The tenants in former days used to lay all their dung upon the land nearest to the farm houses, upon which they sowed barley, and this was called the infield of the farm; upon which they used likewise to sow oats and pease in certain proportions, without any fallow, and without any regard to sowing oats after barley, or barley after oats; or in other words, taking white crops in succession, which is always bad management.

But if the management of their infield in these times was bad, that of their outfield was worse. This part of the country abounds with coal and limestone, and as the old tenants used to work the limestone, and burn lime with their own servants,

servants, they had it in abundance, and at a moderate rate. This was too great a temptation to be resisted; they ploughed and limed all their outfield lands, had great crops of oats at first; but as they had no mercy as to the continuation of crops, they ruined their land most completely. I knew one instance where a tenant limed a piece of land, and took eleven crops in succession of oats, without any manure, except the first liming; and what is wonderful, seven of the eleven crops were pretty good; but after this gross abuse, the land was reduced to bear nothing, except some stalks of wild sorrel, which is the natural production of land over-cropped after liming.

All landlords should restrict their tenants from taking too many crops after lime, without dunging their land, or laying it to grass. Some general clauses of management, (where the nature of the land or farm will admit of it) should likewise be inserted in all leases, such as, "That the tenant shall have a certain proportion of his arable land always in grass, which land shall be sown off with good and sufficient grass seeds, with barley after a summer-fallow or a turnip crop; and at the end of a lease, the outgoing tenant should be obliged to leave all the dung and straw upon the farm to the succeeding tenant; this is called *steell bow*.

In former days they used to plough their land with a large clumsy plough, drawn by six or eight oxen, or two horses and four oxen. This was a very absurd machine for giving the seed furrow in light land to barley, and by being so long a draught where the land was wet, did infinite mischief to the head lands, by poaching and trampling them so much in turning.

A very different system of husbandry prevails now in this part of the county, which may, in a great measure, be ascribed to the introduction of late years, of some very industrious farmers, who are setting a most laudable example to their neighbours, both of industry and judgment in the management of their lands; and it is from this sort of example that the country is likely to derive most benefit; and it is this sort of example that the ignorant are most likely to follow,

follow, for the old-fashioned tenants pay no sort of attention to any precept or example set them by a landlord, as it is an old observation with them, That *the lairds* have no rent to pay, therefore may do what they please.

Many of our farmers, in this part of the country, plough and clean their land incomparably well, and raise turnips and clovers, upon a very large scale; they likewise raise a great many potatoes, which although it is a much more severe crop upon the land than turnips, has been a great relief to the poorer class of people, when corn was so dear. Potatoes are likewise a most excellent food for cows, horses, pigs and poultry. Potatoes must always be boiled when given to poultry, but not given till they are quite cool.

Our farmers raise all their green crops in drills, and horse-hoed, and they have now universally adopted the light foot-plough drawn by two horses. I call it the foot-plough, in opposition to the wheel-plough, so much used in England.

The two-horse plough, tho' only of late years brought into general use among the farmers of this county, was perfectly known and made good use of, in one part of this country 60 years ago. About that time, or rather before that time, a person of the name of Dawtrie came from the south, and took up his residence in the village of Ford. Nobody knew what he was, or where he came from, but being a very intelligent man, the gentlemen of the neighbourhood were fond of his company, and shewed him much attention. He remained sometime in this country, and on his return to the south, he wrote a long letter to a gentleman who had been very civil to him in this country, giving him an account of the system of husbandry which was followed in that part of England where he resided, and recommending the two-horse plough.—

The rotation of crops were as follows :

First year.—Turnips with dung sowed in drills and horse-hoed.

Second year.—Barley sowed with red clover, and a bushel of rye grass to the English acre.

Third year.—Hay, or cut green.

Fourth year.—Oats; after which, return to turnips with dung as above.

R

A better

A better system or rotation of crops can hardly be devised, either for keeping the land in good order, or insuring good crops of every thing; the crop of oats after the clover, in particular, never fails in this country.

The honest gentleman to whom this letter was wrote, not having any turn for agriculture, did not know the value of the communication which was given him, therefore made no use of it himself, but gave the letter to a worthy neighbour in the parish of Borthwick. This gentleman was much taken with the system as laid down in the letter from England, and resolved to give it a fair trial upon a small farm then in his own possession. Fortunately at that time, he had a very active ploughman, who, contrary to the spirit of most of our country servants, was fond of improvements, and of trying experiments. This man, by his master's order, got a new light plough made at Dalkeith, with proper harness for the two-horse plough, when, as ill luck would have it, there happened a great fall of snow, which seemed to threaten to keep the plough a long time from the ground. However, the ploughman was determined not to be baulked in trying this new experiment, and accordingly, to the astonishment of all the neighbours, who concluded him very mad indeed, he put his plough in order, and set to work to plough the snow, which, as the land was level, he did with great success, and by the time the snow went off, his horses were thoroughly broke to the business and that mode of ploughing, and that rotation of crops was followed at Middleton for many years, without any of the neighbours attempting to imitate the example.

But in those days, even the gentlemen were very ignorant of the improvements on land, an instance of which I have heard many years ago.

There were two husbandry clubs established near sixty years ago, the one met at Ormiston, and the other at Borthwick. These were attended by the most eminent gentlemen of the country, among others by a baronet, well known for his public spirit, and for the improvements he made at that time in the breed of horses and black cattle.

This

This gentleman had raised a few turnips at that time, and was feeding some beasts with them in a shade.

This he communicated to one of these clubs, as a great improvement that he was introducing, but such was the ignorance in these days of the value of turnips, that he was universally scouted, as trying a chimerical project; and one gentleman observed, that he might as well expect to feed a man upon physic, as to make an ox fat upon turnips.

Times are now changed, turnips are now much esteemed, and universally raised in this country; indeed you will see small possessions of a few acres, where the fourth part is in turnips.

It has already been observed, that the clovers, both red and white, and rye grass, have been long ago introduced into this country, and are now sown and cultivated in the high parts of this district. This is a very great improvement where the hay crop is properly managed, and consumed upon the farm where it is raised; but, unfortunately, some of our farmers, tempted by the price, and not putting a proper value upon manure, make a practice of selling off their crop of hay annually. This is bad management; but a much worse practice has crept in among some of our ignorant farmers, that is, the taking two hay crops running, or in succession, and selling off both hay crops, without giving the land any manure.

This is perhaps the most ruinous treatment that land can possibly meet with, of course, the subsequent crops of corn will be bad, and the land thrown into great disorder.

A landlord who wishes to see his tenants thrive, and his land kept in good order, (which is equally the advantage of landlord and tenant,) ought to guard against this practice by a similar anxious clause in his leases, to that which he dictates to prevent his land from being ruined by over cropping after lime.

In opposition to this bad practice of hurting land by hay crops, the writer of these pages adopted a very different plan, which was, after sowing off his land with a proper mixture of good and sufficient grass seeds, he took no hay crop at all, but pastured the first year. This was soon found to be

a capital improvement, and some of our most industrious farmers now follow the same practice. This was first tried many years ago in the parish of Temple, and has since been continued with great success, and to a considerable extent, in a neighbouring parish.

The mixture of grass seeds, where the land was to be pastured the first year, was as follows: Six pounds of red, four pounds of white, three pounds of yellow clovers, with three pounds of rib-grass, and one bushel of good and clean rye grass, to the Scotch acre. Where the land was intended for a hay crop, &c. it is recommended to sow twelve or fourteen pounds of red clover, with one bushel of rye grass, to each acre; and in sowing of grass seeds, the clovers may be carefully mixed with the rye grass, and all sown together out of a sheet.

The climate of this part of the county is rather late, of course, the crops of corn under bad management will be late of reaping: the great object therefore of the farmer ought to be, not to sow too great a proportion of his land with corn, and to take care that what he does sow shall be in good order, both rich and clean, and to sow his grain as early as the season will admit of, and with the earliest kind of seed.

In this part of the county, it is very difficult and expensive to get dung to purchase, therefore a farmer should consume all, both hay and straw, upon his farm. This will make manure, and by having a good magazine of hay always upon hand, he will ensure the safety of his sheep in great falls of snow; but if a tempting great price should be offered for part of his hay, and if he sells any, he should certainly be bound to make a return to his land, by bringing a certain quantity of dung (cost what it will) for every hundred stones of hay sold off the farm; but at all events, he should never sell so much as to endanger his sheep in case of a severe winter.

This district, comprehending three parishes, viz. Carrington, Temple, and Borthwick, produces a good deal of grain under good management, and moderate cropping; but the greatest proportion is particularly adapted to produce good and feeding
ing

ing pasture in great abundance. There were grazed and fed off for the butcher last year, in the parishes of Temple and Borthwick, 2410 sheep, and these in inclosures only. Besides this, there were fed with turnips, 486 wedders in the three parishes above mentioned, and 152 bullocks were sold to the butcher from turnips, besides 413 capital bullocks grazed and sold fat from grass to the butcher. From this calculation, which it is believed is very accurate, it appears, that from this small tract of this county, there were sold fat to the butcher last year, 2896 sheep, as also 565 fat bullocks. All this stock is independent of what was sold from the uninclosed part of this district, which would be very difficult to ascertain, altho' it must be to a great amount.

The high grounds and hills in this part of the country are mostly pastured with flocks of sheep of a small hardy sort; the produce of these is partly sold in lambs to the butcher; partly in cast or culled ewes to the grazier; and a great many hogs are sold from this country, both to go to England, and at Linton market to go to the Highlands, from whence they are sent back to the low country at four or five years old.

Much has been said of late, as to the improvement of sheep in this country. The writer of this would beg leave to recommend to the sheep farmers in the high part of this county, to be extremely cautious of rashly making any material alteration in their stock. He would rather beg leave to suggest to them, to begin with making the most of the sheep they are already in possession of, as he is convinced, that by proper attention, much more may be made out in that way than people are aware of. Let them lay their land lighter, and not overstock their pastures, as is commonly the case; keep beasts and horses as much separate from the breeding stock of sheep as possible. The sheep that are turned off to get fat, may be pastured with safety, both with beasts and horses. The greatest attention should be bestowed in chusing the lambs that are to be kept for stock. Take care to keep the best, strongest, and handsomest of the ewe lambs, and let not a good price offered them by a butcher tempt them to sell them. In keeping rams for their flock, it is recommended

ed to keep a much greater number of tup lambs than is usually done, at least till they are Dinmonts, when the breeder will be a much better judge of their shape and form, and of course be better able to select the best, to put to his ewes to breed from.

It is certainly of the greatest consequence to a stock of sheep to have their hogs kept well in winter; a few turnips is well bestowed upon sheep at that age, and there is no doubt, that the better you keep them, the better they will pay afterwards.

Our farmers in the high part of this country should be perswaded to use more butter and less tar in their mixture for smearing.

The writer of this begs that it may not be understood, from what he has said, that he is entirely averse to the farmers in the high part of this country, trying to cross their present stocks with others brought from another part of the kingdom. He only advises them to do it with caution, till they are certain of success.

In the low parts of this country, where turnips can be raised, a different sort of sheep may be introduced with perfect success. The kind that the writer of this would recommend, is the Leicestershire breed of sheep, which has been so much improved by the late eminent Mr Bakewell, of Dishley; who, after very long experience, and having tried all the different sorts of sheep in the kingdom, found that kind to be the most useful, and most inclined to get fat of any other, and of course most likely to pay best to the breeder.

Mr Bakewell's sheep are most remarkable for their good carcase, which is the great object to be wished for in stock, by every breeder. They produce a long wool very proper for combing, but it is not for cloathing. However, though their wool is not worth so much per pound as the short cloathing wool, yet they amply make up by quantity the defect in quality, and their carcase is superior to every other sheep they can be compared with: whereas the short fine wooled sheep have almost universally a flat rib and a narrow back, and produce a very small quantity of wool.

Sheep

Sheep of all sorts are subject to certain diseases, the most frequent of which is the scab, for the cure of which the following receipt is recommended:—Take two quarts of tobacco-juice, and mix it with half an English gill of the spirit of turpentine; let the shepherd take the sheep affected with the scab, and divide the wool over the parts affected, and let him rub this mixture into the skin of the sheep, making use of his nails to scratch it in. Let this dressing be repeated thrice, at the interval of three or four days betwixt each time, and the disease must be very inveterate indeed, if it is not perfectly recovered.

It is chiefly owing to the inattention of shepherds, that this disorder ever comes to any great height in a flock.—Every attentive and industrious farmer will find it much for his interest to go frequently through his stock, and see that the shepherd does his duty. A very bad practice prevails among some shepherds, which is, breeding dogs for sale. This should be expressly prohibited; as in breaking a young shepherd's dog, he will do much mischief to the flocks he is exercised upon at first, and till they attain that degree of sagacity for which some of that species of dogs are so remarkable.

An attentive and industrious farmer deserves every encouragement and indulgence that a landlord can bestow; as a sloven, and scourger of land, deserves a contrary treatment.

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The

The following Errata have occurred in some of the Copies.

Page	Line		
45,	20,	<i>for</i> spacious	<i>read</i> specious
47,	20,	only where, besides	only, where besides
81,	2,	a new fence	anew, a fence
87,	19,	after the last	before the last
116,	16,	even in gardens,	in gardens, even

Also in page 144, the marginal notes † ‡ are misplaced, the one for the other.

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The following table shows the number of the letters
 sent to the various parts of the world, and the number
 of the letters received from the same parts, during the
 year 1841.

Part of the World	Letters Sent	Letters Received
Europe	1,234,567	987,654
Asia	543,210	321,098
Africa	210,987	109,876
America	876,543	654,321
Oceania	109,876	87,654

THE TABLES TO BE PRINTED IN THE

Year	1841	1842	1843	1844	1845	1846	1847	1848	1849	1850
1	1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9	9
10	10	10	10	10	10	10	10	10	10	10
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14	14	14	14	14	14	14	14	14	14	14
15	15	15	15	15	15	15	15	15	15	15
16	16	16	16	16	16	16	16	16	16	16
17	17	17	17	17	17	17	17	17	17	17
18	18	18	18	18	18	18	18	18	18	18
19	19	19	19	19	19	19	19	19	19	19
20	20	20	20	20	20	20	20	20	20	20



